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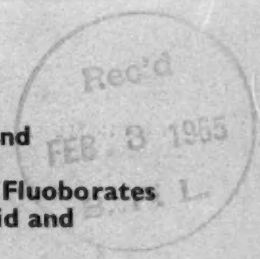
VOL. LXXII

15 JANUARY 1955

No. 1853



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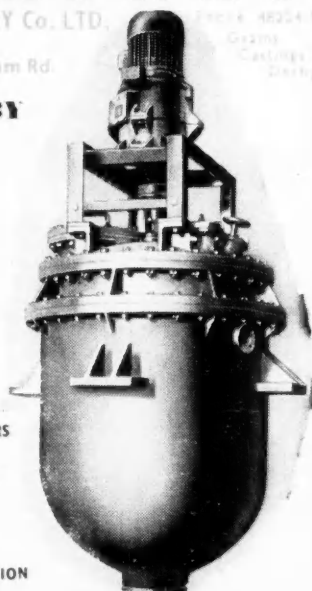
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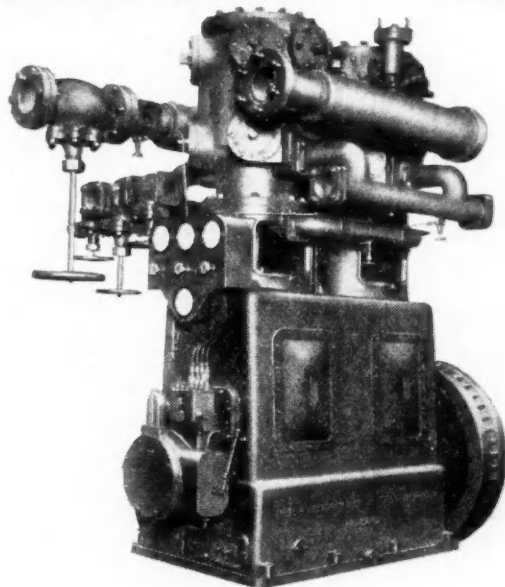
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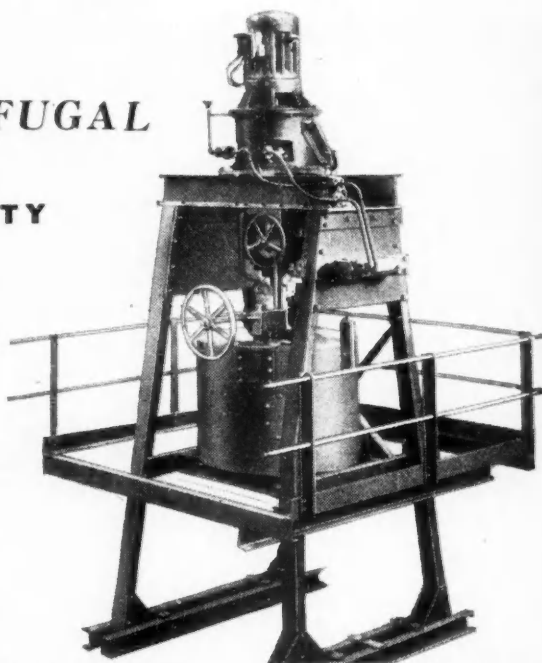
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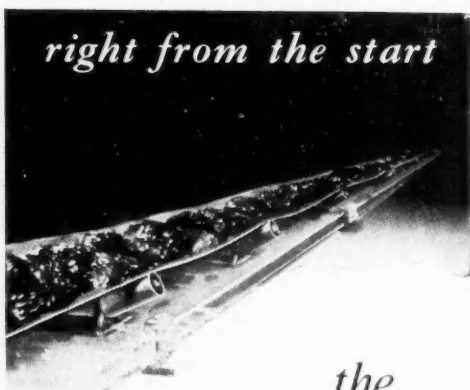
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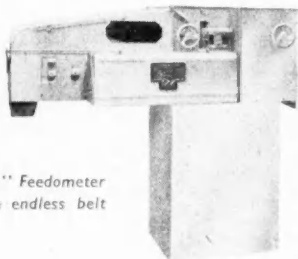
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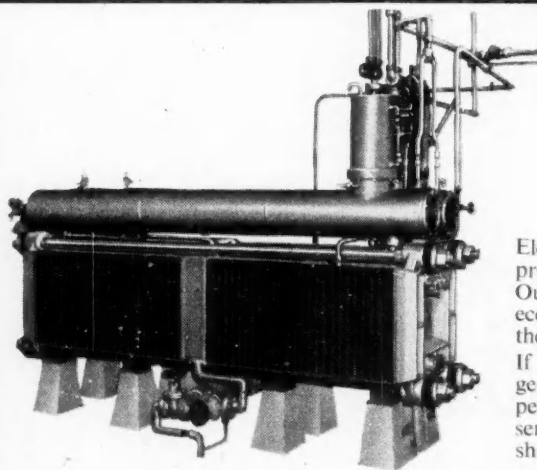
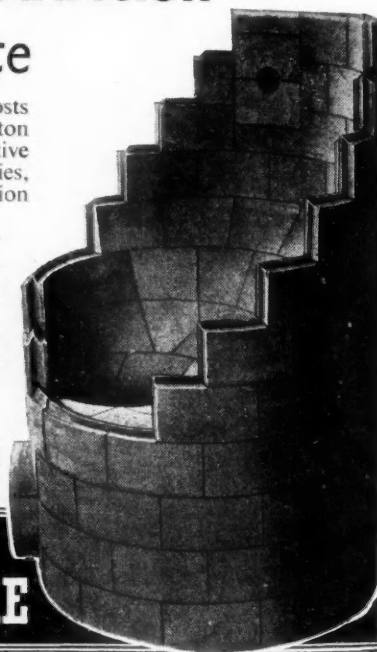
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Food Future

FOOD technology in 10 or 20 years' time could be substantially transformed in two highly important respects—antibiotics may have become major fungicides for spraying many crops, and irradiation may be a principal means of food preservation. 'May' is certainly the operative word in these conjectures. Any research which has already been carried out must be classified as exceedingly preliminary, and the problems that have to be overcome are already indicated.

The successful and large-scale development of antibiotics as agricultural or horticultural fungicides would have sweeping consequences for the present chemical market in this field. Sulphur and copper compounds would face new competition in a market they have dominated for more than 50 years. The new synthetic organic fungicides which are today competing with sulphur and copper in some tasks of spore destruction would be seriously rivalled even before their market had been fully established. Nor is this wholly a matter of the long-term future. Antibiotics are already being adapted to agricultural practice. It has been shown in America that fire blight of pears and apples, walnut blight, wildfire and blue mould of tobacco, bacterial spot of tomatoes, and soft rot and black leg of potatoes can be effectively controlled by spraying with some of the existent antibiotic substances. Those substances most frequently used in this work so far have been streptomycin, terramycin, cycloheximide (or Acti-dione), and endomycin.

Pear blight—and rather less seriously apple fire blight—has no truly success-

ful means of control; copper applications at rates of any promising effectiveness have caused fruit damage. But antibiotic sprays, at concentrations of a few parts per million, have reduced infection rate to one tree in six as against a normal rate of nine infections per tree. Streptomycin at 100 to 200 ppm. has given better control of tobacco blue mould than Zineb, the new zinc carbamate that has achieved recent recognition as the standard method of control. Cycloheximide is already being extensively used in America to control the cherry leaf spot disease. However, it seems a fair enough observation that in a majority of investigations it is streptomycin that emerges as the most effective antibiotic for plant disease control.

The *modus operandi* of antibiotics is not yet understood. It is certainly different from that of conventional fungicides, for the antibiotics are systemic. As with systemic insecticides, the internal effect is not lasting—thus, in some field tests an interval of 14 days between successive sprayings has been too long for control to be maintained. This is not a disadvantage for it suggests that the residue problem will not be one of the major snags. A lasting systemic spray may be cheaper to use but its durability in the plant is likely to mean durability of residues in the produce, and there is no doubt that public health custodians in all countries will not permit antibiotics to be used in crop protection if the food finally harvested puts antibiotics into human diet.

However, residue assay methods have been developed and in many samples of pears, apples, beans, peaches, tomatoes,

etc., taken from streptomycin-sprayed plants, the presence of a residue has yet to be detected. Generally with fruit the sprays are given at the blossom stage, but in one case, when a spray was given to tomatoes within only 14 days of picking the fruit, there was still no detectable residue. Nor in field tests with streptomycin has there been any evidence of built-up resistance. It is perhaps too early to feel sure that this difficulty will not arise—three years may not be enough. Resistance has been reported from small-scale *in vitro* tests with isolated plant disease bacteria.

The most troublesome bar to progress is that of cost. Although spray concentrations are so low and grams rather than pounds are used to make up, say, 100 gallons, the price of antibiotic substances is much above the normal level of agricultural chemicals. But the history of antibiotics in medical use has shown that costs fall dramatically as demand increases, and it seems unlikely that history will not repeat itself in agricultural use.

Turning to food preservation by radiation, here the prospects are even greater but the preliminary development stage is less advanced. Pasteurisation by heat and a limited use of chemical preservatives have together dominated this field for a century and a half. Again the *modus operandi* of a new method is not yet fully understood. It has been known for 50 years that X-rays could kill micro-organisms but the accepted theory that this is due to collisions of bacteria and ionising particles is now in doubt; there seems to be an additional and indirect effect of radiation killing bacteria by producing free radicals in their environment.

The effectiveness of radiation in sterilising food is well established. Gamma radiation enables potatoes to be stored for 18 months—no other method can so strikingly lengthen the normal storage period of four months, and the relatively new sprout-inhibiting chemicals have not been able to bring season-to-season storage. Milk can be irradiated instead of heat-pasteurised. Unfortunately for the hope of rapid progress, there are serious side-effect problems that remain to be solved. The indirect effects pro-

duced by liberated radicals are oxidative in nature, and vitamins are particularly sensitive to oxidation. At present, some vitamin loss seems a certain consequence of sterilisation by irradiation, particularly of B₁₂ and C. However, there are vitamin losses in other methods of food preservation. The production of off-flavours and off-odours seems at present to create a much bigger difficulty. Again the liberated oxidative radicals appear to be responsible, and their undesirable side-effects may have to be controlled by freezing the treated foodstuffs first, or by irradiating in an oxygen-free atmosphere, or even by adding chemicals that will act as radical-acceptors. It is clear, however, that any of these devices must add appreciably to cost, and the last of them would reintroduce the whole problem of chemical additives.

Much nearer early realisation is the use of low energy radiation for the surface sterilisation of prepared foodstuffs so as to lengthen their 'shelf-life.' Sausages and refrigerated meat can have their 'shelf-life' extended from a matter of days to several months, and research at the American Meat Institute has shown that this gentler irradiation treatment can be accomplished without side-effects. Another field of promise is the control of insects in stored grain; complete destruction of these insects can be obtained from relatively low dosage of radiation. The development of this possibility would have considerable effect upon demand for chemical substances that are now used, such as methyl bromide.

It is by no means certain that irradiation techniques will be based upon waste-products from the atomic energy industry. Cheap though these radiation sources would be, their use would involve heavy expenditure upon shielding and safety precautions. Nor can their 'radiation' be turned on and off. Cathode ray machines could still prove more economic in use, especially for low dosage treatments. For either source, however, costs are likely to be greater than for present methods of food preservation. But the degree of preservation obtained will be much greater, and should be amply worth the additional cost.

Notes & Comments

Dynamite in Italy

REMOTE control of dangerous processing has probably never been as fully operated as it will be in the nearly completed new explosives plant at Avigliana for the Montecatini Chemical Group. A hill was first removed to build it, then put back on top of it; the plant is buried by 1,000,000 cubic feet of earth, and 200,000 tons of concrete were used in creating the blast-proof chambers and passages below. The whole object of the plant's construction has been to handle the unpredictably dangerous process of making nitroglycerine so that human beings do not have to be present within the danger-zone of explosion. The kneading chamber—where liquid nitroglycerine is mixed with inert solids to convert it into dynamite—has long provided the greatest risk in this industry. At Avigliana kneading will take place in spark-proof bronze and aluminium basins surrounded by warm water and the mechanical kneader will be powered by a shaft attached to a distant engine. In the chamber there will be no operatives—only a TV camera, a microphone, and gauges. Kneading will be unable to commence until the chamber is empty and its doors locked. The locking of these doors is signalled on the distant control panel, and all the safety-signal lights must come alight on the panel before the starting signal can be given. While kneading is in progress the TV screen in the control room—which is out of range of potential explosion-blast—enables the process to be watched and the microphone relays the customary sounds of the operation. Temperatures are registered on the control panel. Any registration that seems abnormal can be swiftly acted upon by stopping the kneading from the control room.

A Remarkable Development

THIS is a remarkable development for a branch of the explosives industry that at one time was wholly hand-operated owing to the high risks

of mechanical vibrations or metallic impact sparks. The relative safety of cordite and dynamite handling is based upon the extremely hazardous parent-process of making and handling nitroglycerine, which can explode somewhat irrationally. It remains to be seen whether economic progress as well as safety and social progress has been secured at Avigliana. A fuller account of the new factory now reaching completion appeared in *The Financial Times* issue of 31 December 1954.

Potash in the Depths

THE Canadian potash deposits in Saskatchewan are nearly as deep as our own Yorkshire deposits, but progress in Canada would seem, at any rate to judge by press reports, to be making more headway. (See *THE CHEMICAL AGE*, 1955, 72, 178.) Potash Corporation of America is soon to start sinking a 3,000 ft. shaft at Patience Lake. This will cost about \$3,500,000. A large refrigeration plant has to be built to create a ring of ice round the shaft area, freezing the water and solidifying the sedimentary materials. There does not appear to be any intention to apply 'brine-pumping' methods to this problem of mining at great depth. The shafts when they reach the potash bed will be used as communication lines for normal face-mining and for conveying the mined potash up to the surface. The shaft for the Potash Corporation of America will have a diameter of about 20 ft. and will be lined with concrete.

A Strategic Reserve

IT has been estimated that the Saskatchewan deposits are the biggest in the world; however, British potash below the dales in the Whitby area has already been assessed as enough to meet all our own needs for much more than a century. The problem of depth here is about 30 per cent more troublesome, 4,000 ft. as against 3,000 ft. in Canada. On the other hand, it is a little easier for us to obtain imported potash

than it is for Canada—shipment across the sea from Germany or France is not as costly as transporting potash from the United States into Canada. It is mainly these two factors that would seem to make the prospect of mining British potash less economically attractive than the prospects at Saskatchewan—the extra 1,000 ft. and the lower transport charges on imported potash. Nevertheless, the strategic danger for Britain in relying upon imports for all her potash is greater. Canada might confidently expect always to have US potash available; but war conditions could readily make Britain's potash supply a precarious factor in her food production.

Full Employment

THE advertisement columns of *The Times* are well-known as a source of good clean fun, although it is not often that the chemist finds comic relief in them. Last week, however, that standby of advertising, 'well-known City company,' were in need of a B.Sc.(Hons.) chemistry graduate, age 25 to 32. They wanted him to have a good knowledge of organic chemistry, since he was to be engaged on research and development work. Also essential was the ability to read German and French, review technical journals, write articles and assist in the production of technical literature. In case he should find time heavy on his

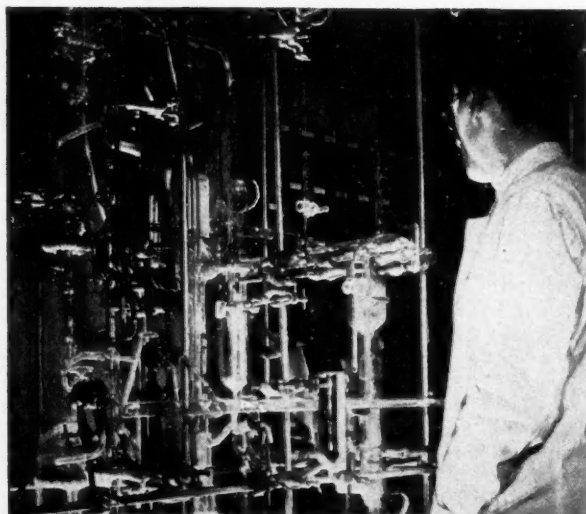
hands, they also proposed to allow him to take part in some outside sales activities—following initial training, of course . . . Strangely enough, there was no mention of when he would be expected to make the tea.

European Conference

REPRESENTATIVES of 11 Western European countries are expected to take part in the conference on 'The Functions and Education of the Chemical Engineer in Europe' to be held in Church House, Westminster, from 21 to 23 March (*THE CHEMICAL AGE*, 1954, 71, 943). The conference is organised by the Institution of Chemical Engineers, in co-operation with DSIR, for the European Productivity Agency of OEEC.

Approximately 30 papers are to be presented at the six sessions of the conference and attendance is likely to be about 400. The provisional programme of papers shows that they will come from representatives of Austria, Belgium, France, Germany, Italy, the Netherlands, Norway, Sweden and the United Kingdom. Advance copies of the papers are not expected to be available before the end of the first week in March.

Although the conference is open to non-members, accommodation is limited and priority will be given to delegates nominated by OEEC member countries and members of the Institution.



Hydrogen analysis apparatus developed by the British Welding Research Association. The apparatus can be used both for steels and light alloys, and has been designed to deal with a fairly high range of gas volumes on a micro scale

A Year of Progress

Manchester Report Looks Forward to Sustained Demand

THE past year has been one of sustained progress for the chemical industry generally, says the annual report of the Chemical and Allied Trades Section of the Manchester Chamber of Commerce. The report was adopted at the annual meeting on 4 January, when Mr. T. C. Fawcett was re-elected chairman. Technical advances have been numerous and production has been at a record level, it goes on. It is estimated that the level of production in the industry at present is about two-thirds higher than in 1948. In the manufacturing industries generally the increase is about half that figure.

The report says that with most user industries at home in a healthy state of activity, and with increasing business from overseas markets, demands have been heavy. Few items, however, have not been easily available although some 'tight spots' have occurred. The shortage of titanium products, for example, which was mentioned in the report for last year, has continued, but here again the home industry is striving to overcome dependence on imported supplies and new plant is being built for the production of this metal.

Sulphur supplies have considerably increased, imports at 298,000 tons for the first ten months of the year having achieved almost a 90 per cent increase over the figure for the same period of 1953. There has, however, been no cessation of effort aimed at preventing a recurrence of the sulphur crisis of 1950/51, and in particular, the work of producing at home acid from indigenous materials.

Output Will Keep Pace

There appears no reason to believe that the demand for chemical products will not continue at its present high level but there are equally no indications that generally speaking this demand will outstrip production.

Exports of chemicals, as listed in the United Kingdom Trade and Navigation Accounts at £168,000,000, show an increase for the period January/October 1954 of £23,000,000 over the comparable figure for

1953. Re-exports of imported chemicals rose from £1,900,000 in 1953 to £2,700,000 in 1954.

On the other hand imports have increased in greater proportion, reaching £81,400,000 as against the £60,200,000 imported the previous year. Particularly striking is the increase from Western Germany, £12,500,000 for the ten months of 1954 against £10,000,000 last year, and the United States, comparable figures being £19,600,000 and £11,400,000. If conditions permit the gradual easing of restrictions on imports from dollar sources to be continued there seems the likelihood of the latter figure continuing to rise.

Dyestuffs Imports

While competition at home from imported products has been more marked, it has not generally reached serious proportions except in the case of a small range of items. The renewal of the Key Industries Duties Act for a further five years has been welcomed, but deliberations still continue regarding the future of the Dyestuffs (Import Regulation) Acts, 1920/34. The dyestuffs manufacturing and the colour using industries have strongly urged retention of this legislation.

Although the export monetary increase was in the region of 16 per cent, in terms of quantity the rise was greater since export prices generally have fallen during the year. This result has been achieved in spite of continued restrictions in many markets and intensified competition from other producing countries. A happy feature of the year's trading has been the increased business with the Commonwealth. Australia, for example, in the first ten months of 1954 increased her imports of chemicals to £14,400,000 against the comparable figure for 1953 of £8,800,000. India, New Zealand and Pakistan also showed increases.

Exports to the dollar markets of North America continued the fall begun in 1953. The United States took only £5,900,000 against the £8,000,000 for 1953 and exports to Canada fell slightly from £5,700,000 to £5,400,000.

In pharmaceuticals business in the home

trade has remained steady. Overall use of pharmaceuticals has not risen significantly, but intense competition between manufacturers and the results of an extensive research programme lead to continual change in the demand for individual products. Release of aureomycin and terramycin for general use by doctors, for instance, has led to increased use of those compounds at the expense of other antibiotics and the sulphonamides.

The Minister of Health, wishing to assure himself that the prices paid for pharmaceutical products are fair and reasonable, has opened negotiations with manufacturers through their association and it is hoped that the outcome will do much to end some of the ill-informed criticism which has been levelled at the industry in recent years. The nation's drug bill, which includes all payments to chemists and the cost of dressings in addition to drugs, does not exceed 10 per cent of the cost of the National Health Service, a fact which tends to be forgotten in the general concern over the need to effect a saving.

Pharmaceutical Exports

Medicinal and pharmaceutical products shared in the increased export trade mentioned earlier in this report, the total achieved in the first ten months of 1954 being £27,700,000—an increase of £3,400,000. Apart from a fall in the value of pencillin exports, due to further substantial reductions in the price of this drug, exports of most of the major groups of pharmaceuticals contributed to the increase, particularly vitamins, sulphonamides, antibiotics (excluding penicillin) and proprietary medicines.

This progress was achieved in the face of unremitting foreign competition, although the United Kingdom's pharmaceutical export trade has undoubtedly been able to benefit from the improved sterling position in such countries as Argentina, Pakistan and South Africa. Useful prospects of expanded trade with China were reported by the British mission which visited Peking towards the end of the year.

Activity in the dyestuffs section of the industry has been estimated as being 15 per cent higher than the level for 1953 and much of this is due to increased export trade. The official trade returns show that exports of items grouped as 'Synthetic Organic Dye-

stuffs' reached a total of £8,500,000—an increase of £2,100,000 over 1953—for the ten month's period. Foreign competition has been intensified but, despite this, progress has been maintained. Overall demand for dyestuffs continues to expand, especially for those of the superior fast type and the industry will not be found wanting in its efforts to maintain and improve upon its export performance and its service to home industry.

The farinaceous industry has now had 12 months of freedom from control and the market generally has remained surprisingly steady.

The progress made by the oil industry over recent years has been maintained during 1954. Demand for its products has been heavy but there has been no inability to cope with orders received. Research and development has gone ahead in all sections and the technical advisory services necessary to ensure the fullest use of advances have been further developed by most suppliers. Their services are readily available to those requiring them.

The supply position in respect of containers has been easier although towards the end of the year shortage of steel has again made the position rather difficult. It still remains an urgency, therefore, in the interests of users themselves, that drums etc. are returned in good condition at the earliest opportunity.

Geigy Price Changes

A MORE flexible price basis for sebacic acid has been introduced by The Geigy Co. Ltd. as from the beginning of the year. Earlier the lowest selling price had been 5s. 7d. per lb. for lots of 1-10 tons. This remains, but the new schedule gives slightly lower prices for larger quantities as follows: 10-25 tons, 5s. 6½d. per lb.; 25-50 tons, 5s. 6d. per lb.; over 50 tons, 5s. 5d. per lb. The prices are for spot deliveries or contracts for deliveries over a period of six months.

Because of an advance in the cost of raw materials, the company state they have been compelled to increase the prices of tritoyl phosphate and trixylenyl phosphate by 1d. per lb. The lowest selling prices for these products are now 2s. 0½d. and 1s. 11½d. per lb. respectively.

THE MIDLANDS SOCIETY FOR ANALYTICAL CHEMISTRY

Analytical Chemistry of Aluminium & Its Alloys

AT the meeting of the Midlands Society for Analytical Chemistry on 8 December, Mr. J. H. G. Thomson, of the Research Laboratories of the British Aluminium Co. Ltd., gave a very interesting paper on 'The Analytical Chemistry of Aluminium and its Alloys.'

Mr. Thomson opened his lecture by saying that he proposed to concentrate on the practical side of the problem, to the exclusion of the theoretical background, with a result that his discourse would give a general indication as to how analytical methods had developed in recent years. The methods which were enumerated had all been used in the British Aluminium Company's laboratories, although many of them were direct adaptations or modifications of the procedures recommended by other workers.

Analytical chemists in the aluminium industry are fortunate in that it is often convenient to separate the bulk of the sample from the elements being determined by a caustic attack and filtration of the insoluble material, which includes such metals as iron, magnesium, etc. Care is, however, required as a number of other metals, e.g. copper, have a slight but definite solubility. Another big advantage encountered is that the common aluminium salts are both colourless and readily soluble, so that direct photometric methods can be readily applied in many cases.

Two Classes of Method

Routine methods of analysis now in use for the determination of aluminium and its alloys are not so neat and streamlined as those used in many other fields, where techniques such as ion exchange and chromatography have been employed to such good purpose. However, the aluminium methods do represent a different approach from that which was common in the pre-war years. These newer methods can, in the main, be divided into two sections, complex formation and instrumentation, and Mr. Thomson accordingly used this division in the presentation of his lecture.

The subject of complex formation, which

includes both organic and inorganic complexes, is very wide and covers such examples as the iron and aluminium tartrate and citrate complexes, the conversion of iron to ferrocyanide, and the complexing of copper with thiourea or nickel with EDTA. In all these cases interfering ions are converted into non-ionised soluble complexes which may easily be separated without the use of any long and tedious techniques. Under this heading of complexes, the formation of specific precipitates, such as nickel dimethylglyoxime, and of colours, as in the case of copper tetraethylenepentamine, are included and they can be used for the actual determination of the metals concerned.

No General Agreement

Many organic compounds have been used successfully in this field, although the selection of the most suitable one for a particular purpose is not a subject on which general agreement is reached and hence Mr. Thomson did not discuss this problem. The main difficulty which is experienced is the fact that many of the proposed complexing agents are not commercially available in this country or that they are unstable and hence difficult to use.

In recent years the British Aluminium Company has adopted several determinations representing different methods for the estimation of metals based on specific colours. These methods and examples are summarised below:—

(1) *Co-ordination Complexes*.—Copper as tetraethylenepentamine.

(2) *Adsorption of Dye on Hydroxide*.—Titan Yellow for magnesium and *p*-nitrobenzene-azo-orcinol for beryllium.

(3) *Isomeric Change*.—Curcumin (yellow) → Rosocyanin (red) for boron

(4) *Conversion to a Fluorescent Form*.—Morin in alkaline solution with beryllium.

(5) *Photometric absorption in the UV*.—Oxine in hydrochloric acid solution for magnesium and also for small amounts of gallium after a preliminary separation.

The tetraethylene pentamine procedure for copper is a very useful one as it gives a

better colour than does cuprammonia, and the complex is also non-volatile.

Inorganic complexes based on the hetero and poly acids are also being more widely used in absorptiometric methods. Examples of their use include:—

(1) Silicomolybdate in nitric acid for silicon.

(2) Vanadophosphotungstate in perchloric acid for vanadium.

(3) Phosphovanadomolybdate in perchloric acid for phosphorus.

In the last two named examples the fact that aluminium perchlorate is extremely soluble in perchloric acid enables a large initial sample to be concentrated to 100 ml. of final solution, and this fact is, of course, a great asset to the determination.

The inorganic field also contributes methods of determination based on the colour of simple salts. These procedures include the estimation of manganese as permanganate and chromium as dichromate and because these salts are stable and simple in constitution they usually do not give much trouble to the analyst.

Of Particular Interest

Two methods which are of particular interest are the determination of copper as cupric chloride and iron as ferric chloride, because they may be estimated using the same sample. Filters are used to isolate the extreme red of the spectrum for copper and the near uv for iron. The solution used for the iron determination is an aliquot of that used for copper and it is virtually colourless to the eye, after dilution. Using this procedure up to approximately 0.75 per cent of iron in alloys may be determined.

A further procedure which is included in the inorganic field is the simple case, which borders on colloid chemistry, where gelatin is used to flocculate colloidal silicic acid from dilute sulphuric acid. The precipitate is then collected, washed, ignited and finally weighed as silica. This method may be used for routine control of amounts of silicon over 1 per cent.

The second section of Mr. Thomson's lecture was concerned with instrumentation. In the widest sense this may include special apparatus used for preliminary separations as well as the instruments whereby a chemical determination is completed by a physical measurement.

The principal instrumental methods used

by the lecturer and his colleagues are the mercury cathode and vacuum distillation equipment, although instrumentation is widely used in the finish of many of the determinations carried out in their laboratories. These techniques include photometric absorptiometry; polarography; flame photometry; and fluorimetry—the last two methods being used to a much smaller extent than the others.

The mercury cathode is of immense value in the determination of magnesium by the pyrophosphate method as it eliminates some of the steps and also reduces the risk of errors by adsorption and imperfect washing of precipitates, etc.

Vacuum Distillation

Vacuum distillation equipment has been found to be of great value for zinc, magnesium and sodium determinations, as well as to a limited extent for potassium. The apparatus used by the British Aluminium Company consists essentially of the following assembly:

A silica distillation tube ($14 \times 1\frac{1}{2}$ in.) is provided with a ground-on cap and has a short side arm ($1\frac{1}{2} \times \frac{1}{2}$ in.) situated $1\frac{1}{2}$ in. from the open end. The side arm terminates in a flat ground surface that forms, with a similar surface, the joint to the high vacuum pump, via a metal bellows. The silica tube is loosely held in a co-axial cooling jacket provided with a water spray and drain tube, the jacket being mounted in a rubber bung by means of the drain tube. The source of high vacuum is a three-stage mercury diffusion pump backed by a rotary oil pump. The vacuum line includes a reservoir of about 1 litre, which is provided with a mercury manometer, and a McLeod gauge reading to 10^{-5} mm. Hg. A liquid air trap is used to prevent mercury vapour passing into the distillation tube.

The tube furnace is $6\frac{1}{2}$ in. long with a $1\frac{1}{2}$ in. bore, wound to give a furnace temperature of $1,000^{\circ}$ C. It is controlled by a 'Variac' and provided with a thermocouple inserted in a fireclay plug in the end. The furnace slides on runners on a base plate which also carries the cooling jacket and tube. Graphite boats are prepared from rod to form a boat about 50 mm. \times 17 mm. wide and 10 mm. deep with a fitting plug in one end. These take samples up to about 15 gm.

This vacuum distillation apparatus has

been used to separate interfering elements. A case in point was the determination of calcium in DTD 300 where the bulk of the magnesium was removed first, thereby considerably simplifying the chemical procedure.

The policy of the British Aluminium Company over the past few years in routine control analysis has been to develop direct photometric methods where possible, as these are time saving, reasonably accurate, economical in laboratory space, glassware and chemicals, and may be used by operators with little or no technical knowledge. As a result of this policy it is now a simple matter for the company's laboratories to carry out the complete routine analysis of any commercial alloy within a normal working day, provided that the general alloy type is known.

In the following table are tabulated the principal methods used by the routine testing laboratories of the company. In many of the methods listed it appears that the limit of speed and simplicity for a chemical method has been reached. It must be emphasised that the list is by no means a complete one.

Cu/Zn/Mg with either Mn or Cr). For impurity amounts of zinc Mr. Thomson and his colleagues have used Stross' polarographic method very extensively, while for very small amounts the concentration of zinc in the sample solution can be increased almost indefinitely by a preliminary separation using the vacuum distillation technique.

With high zinc concentrations (> 1 per cent) vacuum distillation with a volumetric finish on the distillate with 0.05 M potassium ferrocyanide and *o*-dianisidine indicator (pink → creamy white → faint green) is recommended. This method is very much quicker than the old zinc mercuric thiocyanate precipitation (after preliminary separation of copper as sulphide in sulphuric acid solution, followed by zinc as sulphide in buffered formic acid solution), but is rather less suitable when handling large numbers of samples. The gravimetric finish can, of course, be applied after vacuum distillation and it is still considerably simpler than the full chemical separation, but it takes a longer time than the volumetric finish.

For traces of magnesium a variation of the Titan Yellow photometric method has

TABLE 1

Element	Approx. Range Per cent	Type	Reagent
Antimony	0.01 - 1.0	Photometric	Pyridine-Iodide-Thiourea
Chromium	0.01 - 0.3	"	Dihydroxyacetone
Copper	1-5	"	Tetraethylene-pentamine
Iron	0.001- 0.5	"	Thiocyanate
Lead	0.001- 0.20	Colorimetric	Dithizone
Magnesium 1	0.01 - 0.2	Photometric	Titan Yellow
2	0.2 - 3.0	Volumetric	Oxine-Bromate-Thiosulphate (Distillation)
3	3-15	Gravimetric	Periodate
Manganese	0.001- 1.5	Photometric	Iodine-Glyoxime
Nickel	0.01 - 3	"	Molybdate
Silicon 1	0.001- 1.2	"	(Gelatin)
2	1.2-13	Gravimetric	—
Zinc	0.001- 1.0	Polarographic	—

The volumetric determinations of iron in pure metal and of tin in secondary metals and alloys have remained unchanged for many years and seem likely to remain, at least in principle, for a long time to come. Likewise there seems to be little room for further simplification in the well-established routine colorimetric (visual) methods for the determination of manganese and titanium, the latter using hydrogen peroxide.

Zinc and magnesium are, of course, both important elements in aluminium alloys but they have caused difficulty by the fact that their stable and coloured complexes are few. In the higher concentrations they are important in alloys such as DTD687A (Al/

been developed, while for alloying amounts of less than 3 per cent an oxine method with volumetric finish has been employed. Aluminium is removed with a caustic alkali and the magnesium oxinate precipitated from alkaline tartrate in the presence of cyanide. Over 3 per cent the error becomes rather high and the loss in weight makes vacuum distillation to be preferred as the method of determination. This procedure also has the additional advantage that it can be used for Al/Mg/Cr alloys, which are now becoming common in this country. With wet methods it is necessary to separate chromium, and none of the processes tried seemed entirely satisfactory, except when combined with

the lengthy pyrophosphate finish. The oxine finish, when applied, is very unreliable in this case.

Sodium is determined by high vacuum distillation with a finish on the flame photometer using lithium as an internal standard. The instrument used is of the Domingo and Klyne double-beam pattern with a brass grid and modified atomiser. The filters used are 8 per cent cupric chloride in sodium chloride and Chance's OY1 glass to isolate 589 Na, and 0.1 per cent cupric chloride in sodium chloride and Chance's OR1 glass to isolate 670 Li. Both solution filters are contained in 1 cm. glass cells. The galvanometer used is a Tinsley 'Spot' of 2,000 mm. per μ amp. and the range of the instrument is 0-40 ppm. sodium in the presence of 250 ppm. lithium. The high magnesium content in the distillate of some alloy samples entails a small correction. High vacuum is necessary for the sodium determination but not in the case of zinc and magnesium.

Traces of Impurities

The British Aluminium Company, as the only primary producer of ingot aluminium in this country, is probably more concerned with traces of impurities, not normally determined, than are many other aluminium producers and users. The important effects of some trace impurities on the properties of many metallic materials are gradually being recognised, and in recent years many analysts in the metallurgical field have met the problem of analysing for more and more elements at lower and lower concentrations, with increasing vigour. In recent years Mr. Thomson and his colleagues have examined ingot metal and alloys for some 20 further elements in addition to those covered by the ordinary specifications and listed in Table 1. The following table tabulates the methods

used in the determination of these more unusual elements.

The principal methods used in trace determinations were summarised by Mr. Thomson as follows:

(1) *Boron*. The sample is dissolved in caustic soda, after which the solution is poured into hydrochloric acid. An aliquot, equivalent to a maximum of 0.01 g. aluminium, is evaporated with curcumin reagent solution (oxalic acid and methylated spirits). The residue is then taken up in methylated spirits and its absorption read on the Spekker using Ilford 605 filters.

(2) *Carbon*. In this determination the sample is dissolved under reflux in a sulphuric/chromic acid mixture containing mercuric sulphate, with a stream of pure nitrogen being swept through the solution. The escaping gases are passed through a heated copper oxide tube and dried by concentrated sulphuric acid before the carbon dioxide is absorbed in a sodium hydroxide solution containing Alizarin G. The change in colour of the indicator is then measured photometrically using Ilford 603 filters, in order to obtain a measure of the carbon dioxide absorbed.

(3) *Gallium*. This metal is separated as the chloride in an ethereal solution, after which it is precipitated as the oxinate in buffered acid solution and the absorption of a chloroform solution of the oxinate measured in the near uv in order to determine the amount of gallium present.

(4) *Phosphorus*. The sample is dissolved in aqua regia and silicon filtered off, after which it is fumed with perchloric acid until other acids have been removed. The salts are dissolved in water and the solution filtered before ammonium vanadate and molybdate solutions are added. The absorption of the colour is then measured using Chance OB2 and OV1 filters.

(5) *Potassium*. This metal is separated from aluminium by high vacuum distillation and the film extracted with dilute acetic acid, after which the solution is washed into a centrifuge tube. The solution is then evaporated down on a heating block prior to the addition of 1 ml. of cobaltinitrite solution, after which the mixture is allowed to stand for two hours in ice. The suspension is then centrifuged and the liquid decanted before the precipitate is washed with acetone and water, and then dissolved in 0.1N caustic soda. A suitable aliquot of

TABLE 2

Element	Type	Reagent/Remarks
Beryllium	Fluorimetric	Morin in NaOH
Bismuth	Photometric	Thiourea-nitric acid
Boron	"	Curcumin
Cadmium	"	Sulphide in NaOH (or polarographic)
Carbon	"	Alizarin G after wet oxidation
Gallium	"	Oxinate in CHCl_3
Phosphorus	"	Vanadomolybdate in HClO_4
Potassium	"	Greiss after distillation
Sodium	Flame	
	Photometric	After distillation
Vanadium	Photometric	Phosphotungstate in HClO_4
Zirconium	Gravimetric	Phosphate in H_2SO_4

the resulting solution is then taken and diluted to 40 ml., when 2 m.s. of Greiss reagent (α -naphthylamine and sulphanilic acid) are added, with sodium acetate. The absorption is then measured using Ilford 605 filters—although recent tests indicated that flame photometric measurements will replace this absorptiometric finish.

(6) *Vanadium*. In this determination the sample is dissolved in aqua regia and the silicon filtered off, when the solution is fumed with perchloric acid. The salts are then dissolved in water and the solution filtered, after which phosphoric acid and sodium tungstate are added prior to the measurement of the absorption using Chance OB2 and OV1 filters.

The majority of the methods now used for the elements commonly determined in routine analysis are much simpler than some of those outlined above and Mr. Thomson emphasised that he had given more details of the latter types because they are of more particular interest.

Future Problems

With the increased use of spectrographic equipment, the percentage of routine chemical determinations is becoming less, but the preparation of adequate spectrographic standards poses a number of fresh problems. In order that these standards should not become obsolete prematurely it is necessary that they should include controlled additions of every element likely to be of interest in the foreseeable future. Hence, the majority of the alloy compositions used for individual standards in each series are much more complex than are the present commercial alloys.

In addition to the raising of fresh metallurgical problems connected with segregation effects etc., analytical difficulties are by no means uncommon, especially when it is remembered that the results must have the greatest possible absolute accuracy, since so many routine determinations will depend upon them. No primary chemical standards of similar compositions are available so that to some extent the boundaries of knowledge are being extended as the methods are developed. Mr. Thomson closed his very interesting lecture by pointing out that the increasing use of spectrographic equipment for routine control means that, while fewer metallurgical analysts may be required in future, those who are employed will have to

be more experienced and capable analytical chemists.

At this stage the meeting was thrown open to discussion. In the case of the determination of copper as cupric chloride and iron as ferric chloride it was pointed out that close control of the acidity of the solution was necessary and that super cleanliness of the Spekker cells was essential.

The determination of traces of carbon gave trouble with the values of the blanks, which tended to be variable—although this is only to be expected when it is remembered that an alkali and a rapid flow rate are used in the procedure.

This lecture created a great deal of interest and at the close a hearty vote of thanks expressed the appreciation of the audience.

Lustrex Hi-Flow 55

MONSANTO Plastics Ltd. announces the introduction of Lustrex Hi-Flow 55, a faster flowing form of Lustrex polystyrene. Lustrex Hi-Flow 55 can be moulded at lower temperatures and will cut cycle time by up to 15 per cent.

Lustrex Hi-Flow 55 is specially suitable for intricate mouldings, particularly those needing a long flow. It greatly reduces the risk of strain and instability in the finished product and is highly suitable for both very thin wall applications and thick sections. It needs no special moulding technique and can be used in standard injection moulding equipment.

Record Steel Year

THE United Steel Companies Limited announce a record steel ingot production of 2,492,756 tons in 1954. This is the highest ever produced in the British Commonwealth by a single company in one year and beats United Steels' previous Empire best of 2,374,687 tons in 1953 by more than 116,000 tons.

Pig iron production also reached a record level of 1,451,084 tons during the past year. Each of the company's branches made a handsome contribution to the total for the groups and each had a record year. Appleby-Frodingham, for instance, produced more than 1,000,000 tons of steel for the second year in succession; it is still the only British steelworks to reach this figure.

Fibreglass

Developments in the Plastics Field

THERE is a great future for glass reinforced plastics in the chemical, petroleum and food industries for pipes, storage vessels and tanks for transport, it was stated at a Press conference held by Fibreglass Ltd. on 5 January. Among the advantages of the plastics is their relatively good chemical resistance and consequent freedom from normal corrosion.

The conference was designed to give background information about the reinforced plastics and, it was pointed out, 'it is in the interest of a new industry dealing with a new material not to raise hopeless or silly expectations. Because the future possibilities are so great, it is all the more important to be sober and realistic.'

The range of applications is already wide, as shown by the exhibits on view at the conference, held in the firm's London office. These included the top of a Belisha beacon, a model motor-car, a suitcase, a chair, an industrial safety helmet and a collection of fishing rods. Glass reinforced plastics are also being extensively used in building boats. They form the bodywork of the new London Transport 'Roadmaster' bus and are used in scenery at the television studios at Lime Grove.

Mistakes in USA

Development in the USA is ahead of that in Britain, but the apparent ease of fabrication of glass reinforced plastics has tended to turn the industry into a field for 'back-yard' operators. Improperly made products from honest but incompetent beginners have alienated customers. The British industry has been able to profit to some extent by the mistakes made in America. Consumption of Fibreglass reinforcements has in this country increased five times since 1952.

Fibreglass Ltd., a subsidiary of Pilkington Brothers Ltd., is by far the largest of three or four firms in the glass fibre field. The future expansion of this industry is shown by the fact that Tube Investments Ltd. have decided to set up a new firm, T.I. Plastics Ltd., to manufacture glass-fibre piping and I.C.I., who have been for some time making both the resins and the mouldings for the aircraft industry, are now going

to produce body parts for the motor industry.

Fibreglass Ltd. itself is to expand output at its St. Helens (Lancs) and Glasgow plants. The future, Mr. A. H. Davies, managing director, said, depends on lower prices for glass fibres, and he pointed out that in 1950 the cheapest fibreglass reinforcement cost 15s. per lb., while today it was under 5s. a lb. Further price reductions would come, but more slowly.

New Foxboro Courses

Practical & Theoretical

THE Foxboro-Yoxall Training School was opened three years ago to give a series of comprehensive two-week courses for instrument maintenance engineers whose firms are users of Foxboro instruments.

As a result of the experience gained it has been decided that in 1955 the courses will be divided into two series, Course 'A' (mainly practical) and Course 'B' (mainly theory and application). Course 'A' is thus designed primarily for instrument maintenance engineers and, while it will cover elementary theory and general principles of measurement and control, it will concentrate on the instruments and their installation, operation and maintenance.

Course 'B' is planned for technical engineers and will deal in some detail with the theory of instruments, covering measurement, control and regulating units. Stress will be laid on the principles of application, and the procedure for plant start up and control adjustment will be discussed in detail.

The courses, held in the Training School at the company's Trinity Road Works, are available without charge to users of Foxboro instruments. Early application for places should be addressed to the Chief Instructor, Foxboro-Yoxall Training School, Lombard Road, Merton, who will be pleased to supply full details.

The dates of courses to be held in the first part of 1955 are:—Course 'A,' 31 January-11 February; Course 'B,' 28 February-11 March; Course 'A,' 28 March-8 April; Course 'B,' 18 April-29 April.

Metal Detection

Removal of Non-Magnetic Materials

RECENTLY extensive damage was sustained by the casing of a secondary gyratory crusher, caused by tramp metal in the form of a digger tooth carried in with stone from the primary crusher. The use of magnetic extractors to remove tramp iron, and so protect such equipment as crushers and attritors, is well known, and quite common practice, but in an increasing number of cases the tramp metal consists of non-magnetic steels or non-ferrous metals.

With both these classes of material the magnetic apparatus is of course ineffective, and further protection is required to prevent costly damage to plant, and loss of production time and output. With the increasing use in quarry and mine engineering of manganese and high-carbon steel machine parts, this problem is of growing urgency, but a solution has been found in the use of electronic metal detection equipment.

Heavy Duty Equipment

Metal Detection Ltd., Moseley Street, Birmingham 12, are manufacturers of an equipment known as type HD.9. This is of a heavy duty type, designed and constructed to withstand the hard usage, dust and moisture under which it must operate in mines and quarries—conditions which, in the past, have precluded the use of electronic equipment in such locations. Some installations have now completed over five years' continuous operation in coal and ore plants, indicating the robustness and reliability which are fundamental to consistent performance.

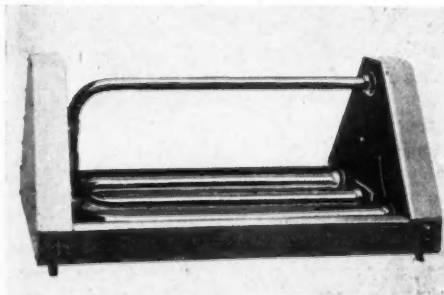
A complete installation consists of two major items, the search coil unit and the control cabinet, together with the necessary interconnecting cables and certain auxiliary items. The search coil unit consists of two mutually perpendicular coils, each of a single turn of heavy gauge copper tube, arranged so that one lies under the conveyor or chute carrying the material to be inspected, while the other completely surrounds the conveyor. This arrangement may be varied for particular cases, depending on the actual application, but the majority of heavy duty installations are in this form. The whole unit is mounted on

shock absorbers, and weighs approximately 500 lb. for a 36 in. conveyor coil.

The control cabinet houses the whole of the electronic apparatus and power supply, together with testing controls and the final relay. It consists of a sheet steel case hinged to a mounting panel to give access to the rear of the vertically mounted chassis for maintenance. The front panel is also hinged to provide access to the valves and to the control and metering unit. It can be locked to prevent unauthorised interference after adjustment, and is completely sealed to prevent the ingress of dust or moisture. When closed only the signal lamps are visible. All connections are made to a shielded terminal box at the bottom of the unit. By means of the control and metering unit the operation of all the valves can be checked very quickly, either as a routine test or to assist the location of a suspected fault.

An oscillator in the control cabinet sets up a high frequency electromagnetic field in the coil unit, and with no metal in the field the system is adjusted mechanically and electrically to give zero signal. When a piece of metal passes through the search coil the field is disturbed, and the resultant signal amplified to operate a control relay, whose contacts may, in turn, control any desired external apparatus.

In the simplest case, the relay may control the conveyor motor contactor, causing the belt to stop when metal is detected; in other cases it may control auxiliary apparatus automatically to deflect the metal to waste. In addition it may operate the fol-



The robust detector coil

lowing auxiliary items: a signal lamp, situated remote from the control unit; a warning horn or bell; and a marking device to indicate the location of the metal on the belt.

If the system is arranged to remove the metal automatically, the detector can be arranged to reset automatically after a suitable time delay, or, alternatively, it can be arranged for manual control by means of a push-button resetting both the detector and the motor contactor for the main drive.

The smallest particle that can be detected depends on the type of material, the size of the material, the width of the conveyor, and similar details appertaining to a particular plant. For instance, large particles may be detected in a rich ferrous ore, but small pieces could not be located owing to the effect of the ore itself necessitating a reduction in sensitivity. On the other hand, very small pieces can be detected in such materials as phosphate rock or limestone, as these have no effect on the detector.

Petrochemicals Booming

CANADA'S petrochemical industry is expected to grow still further and J. Gerald Godsoe, vice-president of British American Oil Co. Ltd., in the course of a review of the Canadian oil industry, said that 'whether you look at the petrochemical industry through the spectacles of science or business, of factory or home, of health or sickness, of work or play, of past or future, you get an amazing sight.'

'Before Leduc [discovery of Leduc oil field in Alberta] Canada had two petrochemical plants, with an investment of around \$4,000,000, turning out two or three products,' he said. 'Today, less than eight years later, the industry has two dozen plants worth some \$725,000,000, fed by oil or natural gas. These plants are producing over three dozen chemicals, nearly all of which were formerly imported, with scores of industrial applications and fabrication into hundreds of items.'

Mr. Godsoe said that he foresees a continuing great development of the petrochemical industry in Canada, supplying a tremendous impetus to the development of the country's economy and multiplying the value and the benefits of oil and gas. Particularly, he declared that he believes once natural gas enters the Eastern Canada markets at a competitive rate it should bring a wave of expansion.

New Oxygen Company

British & German Combination

THE British Oxygen Co. Ltd., in association with Gesellschaft für Linde's Eismaschinen AG, of Wiesbaden, have formed a joint company to sell bulk oxygen and gas separation plants. To be known as British Oxygen Linde Ltd., the new company will be purely a selling company with a capital of £20,000, shared equally between the two concerns.

The directors are Mr. F. J. Clark and Dr. P. H. Sykes, representing British Oxygen, and Mr. W. Ruckdeschel and Dr. J. Wucherer, representing Linde. The headquarters of British Oxygen Linde will be at Bridgewater House, Cleveland Row, London S.W.1, where British Oxygen have their offices.

The company will offer to industry air separation plants, including tonnage oxygen and nitrogen plants, of the most advanced types, and gas separation plants for separating and purifying the constituents of coke oven gas, refinery gas and the like.

Functions are to sell plants including, when required, full erection with buildings and ancillary equipment, commissioning and testing, so that the plant may be handed over as a 'turn-key' proposition. BOL will have the support of both British Oxygen's and Linde's construction and contracting departments, and, depending on circumstances, plants may be produced by either company or in conjunction with one another.

Mr. F. C. S. L. Lewin-Harris, marketing director of BOC, announced the formation of the new company at a Press conference in London on Monday. He said that many notable improvements in steel production and welding technique, and in other processes, had been made possible by the use of oxygen in place of air, and he thought that British industry was just becoming aware of the many potential uses.

Many applications are envisaged for separation plants in the synthesis of ammonia, in complete gasification of coal, in copper smelting and in sulphuric acid manufacture, to name only a few.

British Oxygen Linde will sell plants with capacities of from 50 to 350 tons per day, at a cost of from £150,000 to £500,000. They hope to receive orders for some 25 plants in the next five to ten years.

German Chemical Sales Up 14 Per Cent

Shortage of Capital the Main Problem

PROVISIONAL estimates put the sales of the West German chemical industry in 1954 at DM.12,400,000,000, an increase of 14 per cent over 1953 when a similar rate of expansion was recorded. Exports once again contributed the lion's share to the year's advance. They are estimated to have been about DM.3,000,000,000, or fully 30 per cent above the 1953 level, while home market sales rose by 9 per cent only over the preceding year. The latter figure is a little lower than the overall increase of industrial production in the Federal Republic and suggests a slight decline in average prices of chemical products. In line with the general tendency in the German economy, the consumption of chemicals in manufacturing industries serving the final consumer did not expand as much as that of primary and general industrial chemicals, and it is believed that, saturation point having been reached in some of these industries, further advances in these fields will be insignificant in the new year as far as the home market is concerned. Pharmaceuticals are prominent in this group.

Still Not Satisfied

The big increase in exports still does not satisfy leading German chemical manufacturers, although it has raised the chemical industry's share in total German exports from 12½ to 14 per cent. Last year's export volume was still one-third below the pre-war level. If other countries had liberalised their imports to the same extent as the Federal Republic, a further expansion of the world trade in chemicals would have been achieved easily, it is contended; German chemical imports last year actually increased by a higher percentage than the country's chemical exports. For 1955 further export gains are expected to result from the growing prosperity in important chemicals-importing countries both in Europe and overseas, from successful trade negotiations with overseas countries, and a further expansion of commerce within western Europe. The distribution of West German chemical exports between European and non-European destinations has not changed greatly last year and still accentuates the importance of

European markets to the German chemical industry.

Lack of Finance

Expansion in the chemical industry with its huge requirements of costly new plant and equipment is still hampered by lack of finance. Capital expenditure per worker is only ¼ of the rate in the US chemical industry and does not appear to expand. It is reported that less than 20 per cent of the capital newly invested in the West German chemical industry in 1953 was obtained from outside investors or through State loans. While certain funds have been invested in new chemical plant in the Federal Republic either by German companies operating in fields bordering on the chemical industries or by foreign enterprises desirous of entering the German market, the bulk of the finance required still has to be provided by chemical manufacturers out of their own resources. Tax concessions operative from 1 January should make it easier to obtain long-term finance for plant development, the more so as the Federal and regional authorities are expected to make sparing use of the facilities of the German capital market this year.

Lack of capital seems to be largely responsible for the reluctance of German chemical manufacturers to superimpose armament orders on their normal business. It has been suggested authoritatively that additional demands arising from this direction should be chiefly covered by imports, leaving German industry free to develop along more permanent peacetime lines. The building industry, which is now very busy indeed, is expected to provide additional opportunities in the home market, and the new developments in the field of chemical fibres and plastics are also making heavy demands on leading chemical manufacturers in the Federal Republic. Well-informed observers feel that relaxation of Allied 'A-B-C' (Atom, Bacteria, certain Chemicals) restrictions would find the industry incapable of providing the necessary finance for new plant in these fields.

Farbenfabriken Bayer AG, Germany's largest chemical producer, increased sales

in 1954 by 17 per cent to DM.1,200,000,000, of which exports accounted for 37 per cent compared with 34 per cent in 1953. New construction and repairs, Bayer reports, surpassed all other post-war years; part of the new construction served to provide production facilities for new products, some of which will be ready for manufacture in 1955. More attention is to be devoted in future to rationalisation of production processes, not only in order to reduce producing costs but to create the prerequisites for gradual change-over to a 40 hour week.

Greater reliance on fully and partly auto-

matic processes is also aimed at by other German chemical producers in view of the rising trend of wages. The industry's labour force was in the third quarter of last year 8.9 per cent higher than it had been in the average of the preceding year. It thus appears to have expanded at a rate only slightly smaller than the volume of production. Though the German labour position is not quite as tight as that in this country, the available manpower reserves are being quickly exhausted, and this provides an additional incentive for mechanisation and automatization of production processes.

Borax Reject US Offer

Hint of Move to America

THE directors of Borax Consolidated Ltd. have brought to an end the discussions they have been holding with the American group who wished to obtain control of the company (see *THE CHEMICAL AGE*, 1954, 71, 898 & 1264). In a circular to stockholders they state they have come to the conclusion that 'such a transaction would not be in the interests of the stockholders, the employees or your company's many customers throughout the world. It would have necessitated the transfer to foreign ownership of a great British concern with world-wide interests in an expanding and important field of enterprise.'

The company's operations for the financial year ended 30 September, 1954, have been successful, and the directors intend, on completion of the audited accounts, to recommend a final dividend of not less than 12 per cent on the deferred ordinary stock, making not less than 16 per cent for the year. This compares with 11 per cent in the previous year.

Acceptance of the American offer depended on Treasury consent being obtained, and the directors point out that if application were made to the Treasury, the case would be complicated and, it is believed, without precedent. The chances of permission being given would be doubtful.

The circular says that the principal inducement for the American group to make the offer is the difference in taxation between the USA and the UK. Certain American companies enjoy special depletion allowances. These have been extended to Borax in the USA, but since no comparable allowances

are given here as deductions from British tax, the whole of this saving passes to the British Inland Revenue, not to the company. The company also pays profits tax which does not exist in the USA. 'Thus it is clear that if your company were domiciled in the USA instead of here, the savings on account of these two taxes would be very considerable.'

Representations have been made to the Chancellor of the Exchequer to remove the tax handicap, and, warns the circular, 'Should such relief be denied your company, your board may have to consider applying to the Treasury for permission to transfer the company's domicile to the USA, in order to secure for stockholders the reliefs that others seek to gain for themselves.'

Specific Gravity Tables

NEW tables showing the relation between the specific gravity of spirits at 20° C and the percentage of ethyl alcohol by weight and volume, with the corresponding percentage of proof spirit, have been approved by the Commissioners of Customs and Excise, and their use to ascertain the strength of spirits has been authorised by Statutory Instrument No. 1611 of 1954.

The new tables supplement, but do not supersede, the existing tables of specific gravity of spirits at 60° F and 80° F.

The new ones will be more convenient for scientists and laboratory workers who, by international usage, are accustomed to express a number of physical and chemical properties of substances by reference to a standard temperature of 20° C.

Copies of the new tables are on sale, price 4s., or by post 4s. 1½d.

Sharples Super-D-Hydrator

Now Manufactured in Britain

SHARPLES Centrifuges Ltd., of Tower House, Woodchester, Stroud, Glos, are now manufacturing in Britain the Super-D-Hydrator, which has previously only been available from the Philadelphia factory. This is a completely automatic continuous centrifuge of the perforated basket type, suited to separating, washing, and dehydrating slurries of all forms of crystals.

The basket of the Super-D-Hydrator is arranged to rotate about a horizontal axis, at constant speed. By automatic control the crystal slurry is admitted to the rotating basket, until a crystal layer of 2-3 in. depth is built up. A leveller arm, actuated by a hydraulic snubber mechanism, ensures that an even layer of crystals is formed. Crystal washing is effected by one or more automatically controlled rinses, and after a final period of spin to remove liquor from the crystal bed, the basket load is discharged.

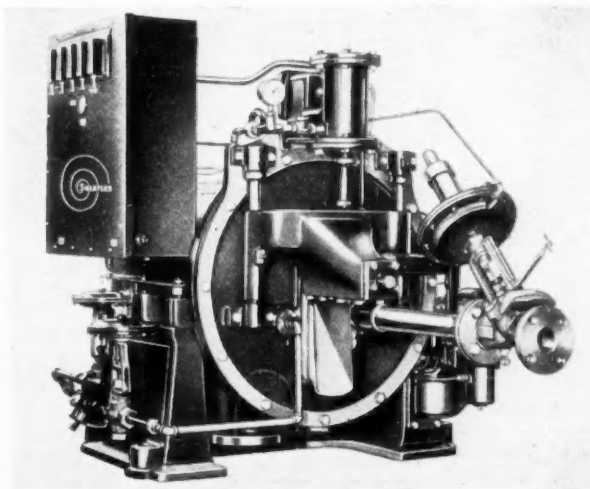
Discharge is accomplished by a hydraulically operated rising knife that cuts into the layer of crystals and delivers them to the outside of the machine through a chute. A thin layer of crystals is retained on the screen, which provides a filter medium for the next load. The use of such a filter bed permits the use of larger mesh than would be possible without it, thus giving higher liquor drainage rates. It is usual to keep

this thin layer approximately 1/16 in. thick.

Where there is a tendency for the crystals to glaze, it is necessary to perforate the crystals with a mild solvent wash, called the 'screen rinse,' using a suitable liquid, ordinarily water or steam. This rinse is introduced automatically at the beginning of each cycle.

A typical operating cycle may occupy from 20 seconds to 20 minutes, depending on the nature of crystals being handled and the complexity of the operating cycle. Where necessary, cake rinsing with a number of different liquors may be effected. For example, a neutralising liquor may be used for the primary wash, followed by water. Moreover by the use of an automatically controlled diversion valve on the frame drain outlet, the mother liquor and rinse liquors may be kept separate.

The time intervals of each step in the cycle can be independently varied at will, while the machine is running, to suit variations in the condition of the feed slurry, or to alter the purity or dryness of the product. All the intervals are controlled by electric timers, graduated in seconds. The timers used are of the cycle stop type; thus each timer operates through its cycle after being started by a starting impulse, times out and energises the next timer in the cycle, and



A general view of the Super-D-Hydrator

then resets after the unit is de-energised, to restart again at the appropriate moment in the next cycle.

The various circuits energised by the electric control timers operate electropneumatic relay valves in the control relay section. Air passed by these valves actuates diaphragm valves in sequence on the slurry, wash liquor, and hydraulic actuating circuits. The control relay is mounted on the Super-D-Hydrator frame, or adjacent to the machine, while the control timer may be mounted on a convenient wall or in the control room. Switches are provided so that each step in the cycle may be manually operated until the optimum time intervals for each step have been established. The switches are then put to the automatic position, and the determined time intervals set on the time cycle controllers.

Various models are manufactured differing in the type of frame construction. For handling non-toxic non-volatile materials the 'open-type' Super-D-Hydrator is employed. For toxic or hazardous materials a 'Vaportite' model is manufactured having a hood enclosing the discharge chute. Where necessary explosion proof wiring and electrical control gear is fitted.

Interesting variations of the 'Vaportite' machine may be supplied for special duties. For example the frame and hood of the machine can be filled with an inert gas. Another modification is designed for use with sterile products and, apart from being sealed to prevent ingress of non-sterile materials, provision is made to steam sterilise the contact parts of the machine without dismantling it.

New Ways of Packaging

Exhibition at Olympia

CONTAINERS made of metal, glass and plastics will be among the items on show at the Packaging Exhibition at Olympia, London, from 18 to 28 January.

Reads, of Liverpool, will be exhibiting a range of tin boxes and steel, aluminium and lined drums and other metal containers used in the chemical industry. Some of the special closures being shown are FlexSpout plastics necks, RingSeal tamper-proof fittings and ViseGrip pressed steel and aluminium bungs. Of particular interest is the recently developed 'Vacuum Pack Drum' designed for evacuating the container after filling and for the subsequent insertion of an inert gas, if required.

The Glass Manufacturers' Federation will have a stand which will show the use of glass containers in a number of industries, such as food, brewing, pharmacy and perfumery. Products of the glass industry will also be on display. The importance of glass in packaging will be featured in an exhibition, to run concurrently, at the headquarters of the British Glassware Industry, 19 Portland Place, W.1.

The theme of the Packaging Division of the Bowater Organisation will be development, and their stand will feature, among other things, a new fibre drum and Britain's first tear-strip corrugated case. Also on show will be the latest refinements in multi-

wall sack design, new bags and protective wrappers.

Tuboplast, flexible polythene tubes, will be the main exhibit of Casceloid, a Division of the British Xylonite Co. Ltd. These new tubes are suitable packs for cosmetics and toilet articles (such as toothpaste), various chemicals and foods.

Russell Constructions Ltd. will be showing their Russell Separator with submerged mesh. In this machine, the straining operation takes place through a screen submerged in the liquid and one of its most effective applications is for straining out sand and bag fluff from sugar water. Another machine on show will be the new Russell Cascade Mark V Grading Machine which makes possible sieving processing calling for classification into three grades.

Fuller's Earth Production

Production of fuller's earth increased 3 per cent in 1953 compared with 1952, according to reports of producers to the Bureau of Mines, US Department of the Interior. Fuller's earth consumed in mineral-oil refining in 1953 totalled 92,107 tons, 21 per cent of the total output compared with 32 per cent in 1952. Absorbent uses accounted for 130,108 short tons, 30 per cent of the total (24 per cent); insecticides, 75,695 short tons or 17 per cent (18 per cent); rotary-drilling mud, 52,429 short tons or 12 per cent (15 per cent); vegetable oil, 17,979 short tons or 4 per cent (4 per cent).

OCCA Exhibition & Conference

More Firms Will Be On Display

THE Exhibition Committee of the Oil and Colour Chemists' Association have completed preparation of the brochures for the 1955 Seventh Technical Exhibition, organised by the London section. The exhibition will take place on 15, 16 and 17 March at the Royal Horticultural Society's Old Hall, Vincent Square, London S.W.1. It will be open from 3 p.m. to 8.30 p.m. on the first day and from 11 a.m. to 7 p.m. on the other two days.

Sir Wavell Wakefield, MP, chairman of the Parliamentary and Scientific Committee, has accepted the committee's invitation to be present at the exhibition luncheon, which will be held at the Criterion Restaurant, Piccadilly, London W.1, on 15 March, and he will perform the opening ceremony at the exhibition hall at 3 p.m. on the same day. The committee reports that there has been an increase of over 40 per cent in the number of companies showing over those exhibiting at the 1954 exhibition.

The theme of the exhibition will be the presentation of technical advances in those industries supplying the paint, varnish, printing ink, linoleum and other allied industries, and the technical advances may relate to new products, new knowledge relating to existing products and their uses or, in suitable cases, existing knowledge which is not generally available in the consuming industries. There will be no charge for admission or for the descriptive brochures regarding the exhibits.

Copies of the exhibition brochure and further information can be obtained from the General Secretary, R. H. Hamblin, M.A., Oil & Colour Chemists' Association, Memorial Hall, Farringdon Street, London E.C.4 (Tel.: CENTral 2120).

Conference at Llandudno

The 1955 conference of the association will take place at Llandudno from Tuesday, 7 June, to Saturday, 11 June. Most members will be accommodated at the Grand Hotel, where the technical sessions, under the general title 'Film Structure and Adhesion,' will be held. The papers are being arranged by the honorary research and development officer of the association, Mr.

P. J. Gay, of Hangers Paints Ltd., Stoneferry Works, Hull, who has reported to the council that the following papers will be presented:

The Papers

Mr. P. D. Wright, of British Industrial Solvents, on the effect of solvents on film structure; Mr. R. B. Drew, of British Glues & Chemicals Ltd., on co-acervates as adhesives; Mr. J. H. W. Turner, of British Resin Products Ltd., on the relationship between composition and mechanical properties of films such as those deposited from high polymer emulsions. Dr. S. H. Bell, or a colleague, from the Paint Research Station, will give a general paper on film structure, dealing particularly with chemical and physical aspects. It is felt that these last two papers should go particularly well together, and this also applies to the next two papers.

Mr. G. A. Day, of the Electrical Research Association, on water sorption in polystyrene, cellulose triacetate and polyvinyl chloride below saturation vapour pressure; Dr. J. H. Schulman and Dr. C. S. Hocking, of the Department of Colloid Science of Cambridge University, on the induced permeability of porous membranes to charged particles, which will have implications in the permeability of paint films. Mr. D. M. James, of International Paints Ltd., on experiments on paint adhesion under moist conditions; Dr. N. A. Brunt, of Verf-Instituut TNO, on elasticity of some types of varnish films as a function of time and temperature. Mr. P. O. Blackmore, of the Interchemical Corporation, will be coming to the conference as the official representative of the Federation of Paint and Varnish Production Clubs of America, and it is hoped that he will be presenting a paper.

For the three technical sessions arranged the following members of the Association have agreed to act as chairmen: Dr. A. I. Escolme of the Newcastle Section, Dr. M. E. D. Jarrett of the Manchester Section, and Mr. J. L. Ledwith of the London Section.

A form of registration for the conference will be sent to members of the association during January. The council has fixed the

registration fee at 45s. for members and 30s. for wives. The Llandudno Urban District Council have invited members and wives attending the conference to a civic reception at the Grand Hotel on the evening of Wednesday, 8 June, and the association's conference banquet and ball will take place on the final evening, Friday, 10 June, at the Grand Hotel.

Arrangements have been made for coach tours and a steamship trip for the ladies, and the managements of two golf courses have agreed to offer facilities to members for those periods during which technical sessions will not be held.

Non-members of the association wishing to obtain registration forms and any other information should write to the General Secretary, R. H. Hamblin.

Dunlop in Rochdale

TWO new laboratories, one for textile research and the other for factory technical control, are to be opened by Dunlop Cotton Mills Ltd. in Rochdale. The Rochdale Town Council has approved the plans for the research laboratory, now being built in Royle Road.

The research centre's textile division is concerned chiefly with the performance of textiles and in searching for ways to improve them. The Rochdale laboratory will work on the fundamental problems of textile processing techniques.

The new factory technical control laboratory will provide facilities for routine quality control and for the development and practical application of the knowledge gained from the work of the research laboratory and that of the textile research organisations such as the Shirley Institute and British Rayon Research. These facilities will include an experimental machine room and a workshop equipped for the manufacture of prototype machine components and instruments.

The new research laboratory will have a staff of eight and the present routine control staff of 22 will be increased by eight.

NZ Fertiliser Project

A new fertiliser works is to be built by the Challenge Phosphate Co. Ltd. near Morrinsville, New Zealand. It will have an output of 100,000 tons of superphosphate a year, and an airstrip suitable for use by top-dressing aircraft will adjoin the works.

Plastic Tanker

AN experiment which, if successful, may make it possible to put bigger tankers with greater load carrying capacity on the road, is now being conducted by Shell-Mex and BP Ltd. and Semtex Ltd., a Dunlop subsidiary.

One of the company's tankers has been fitted with a 40 gal. fuel bunker tank, a product delivery pipe and a pair of mudguards made of glass reinforced polyester resin. The weight of these three items has been cut by half by the use of the new material.

Before large-scale production can begin the behaviour of the new material must be studied in service and the effects of exposure to diesel oil and the product carried, and also any flow effects, studied. Additional information is also needed about the effects of vibration.

An important aspect of the use of polyester is the speed with which repairs can be carried out. One of the mudguards on the test vehicle was damaged soon after collection from the Semtex works. A steel mudguard would have required removal, panel beating and recellulosing to restore to its original condition. Repair with polyester took about 20 minutes without the need for the mudguard being removed from the vehicle.

Semtex hope to get valuable data from this experiment to assist future considerations in respect of tank construction and for associated fitments, and on the moulding of special shapes required for transport vehicle construction. Tankers made of polyester are already being produced in the US.

Chemical Christmas

'THE Edwardian industrial scene is rarely associated with the festive season, but the eve of the New Year is propitious for a backward glance,' says a greetings card we received. This was from Ralph Smithson, L.S.I.A., publicity officer to Hickson's Timber Impregnation Co. (GB) Ltd., a subsidiary of Hickson and Welch Ltd. The parent company has seen 60 years of the chemical industry, 50 years in Yorkshire, and 40 at the Castleford works. The illustration on the card is a reproduction of an original painting by Mr. Smithson, showing the old plant in Chald Lane, Wakefield, where ferrous sulphate, 'nitrate of iron' and later sulphur blacks were made.



The Chemist's Bookshelf

OUTLINES OF ORGANIC CHEMISTRY.—By E. J. Holmyard. Edward Arnold, London. 3rd edition, 1954. Pp. vii + 492. 16s.

The period of 18 years since the last edition of this text appeared has been exceedingly rich in developments of theoretical, descriptive and applied organic chemistry, making the task of revising a small advanced text one of great difficulty. On the theoretical side reaction mechanism has come into prominence, and more and more structure is seen to determine behaviour; on the industrial side petroleum competes with coal as a source of aromatic hydrocarbons and of phthalic acid; on the practical side new reagents and new reactions clamour for inclusion.

It is interesting to see how the author, who is the editor of *Endeavour*, and an experienced teacher, meets the situation. Of the two courses open to him, that is, of either recasting his book entirely and making a new selection of theories and descriptive matter, or, of adding, here and there, new pieces to the old framework, Dr. Holmyard has chosen the latter, probably arguing that to insert and use some of the advances in theory was more instructive than indefinitely to increase the factual matter, a conclusion with which most will concur.

Thus, although giving no formal treatment of reaction mechanism, he adds Ingold's theory of nitration to his account of nitro compounds, and in explaining the chemical behaviour of ethylene he makes use of its electronic configuration. Resonance is introduced in the discussion of the structure of benzene and three pages are given to a consideration of free radicals. Whatever he includes he expounds with his accustomed clarity and economy of phrase.

Half of a chapter, new to this edition, is filled with chemistry long known but not appearing in earlier issues of the book; the other half describes some of the newly discovered compounds of fluorine and of silicon. In addition there are new notes on such

items, prominent today, as penicillin, natural gas, butadiene, ethylene oxide and the Fischer-Tropsch reaction. The new material adds 25 pages to the book.

Despite the great advances in theory, a text such as the one under review, intended for sixth form students, has to meet the requirements of British examination boards. It must therefore expound fundamental principles and techniques of organic analysis and give an account of well-accredited preparation methods, of the properties of functional groups and of the determination of structures. Dr. Holmyard's book has long been recognised as doing this thoroughly and the present revision should extend the period of its usefulness.—G.F.

FACHWORTERBUCH FÜR FACHAUSDRÜCKE AUS DEM LACK- UND FARBENGEBIET: Deutsch-englisch und englisch-deutsch. By Otto Merz. Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart. 2nd edition, 1954. Pp. 351. DM.18.50.

This should prove a useful little book for the colour chemist. Dr. Merz has had the assistance of several experts, both in English and German speaking countries—which has in some cases added to his difficulties. He very rightly draws attention to the different spellings and uses of words common to oil and colour chemistry in both Britain and America, but his excessive caution in this respect has led him into confusion such as the following:

bituminous paint Bitumenfarbe
bituminous paint (E) Bitumenfarbe, Schwarzlack
bituminous varnish (USA)	Bitumenfarbe, Schwarzlack
bituminous varnish Asphaltlack

In addition, some careless proof-reading, or an incomplete knowledge of the English language, has led to the appearance of such oddities as kerozene, fillers' earth, and eyelet varnish. Luckily, all errors of this sort appear to be of minor importance and do not detract from the usefulness of the book.

At the back of the book are some half-dozen conversion tables.—B.I.

IN THE EDITOR'S POST

Manchester's First

SIR,—With reference to the announcement on page 16 of your issue of 1 January, of the opening by Baird & Tatlock (London) Ltd. of their new offices and showrooms in Manchester, I feel that I should not allow to go uncontradicted the suggestion that this will be the first showroom in Manchester covering a complete range of scientific instruments, apparatus, laboratory fittings and chemicals.

It was as far back as 1911 that John Tatlock opened a branch of his Glasgow business in Manchester, which was subsequently to become the Manchester showroom, warehouse and offices of Griffin & Tatlock Ltd., covering all the requirements for instruments, apparatus and chemicals of indus-

trial research and educational laboratories.

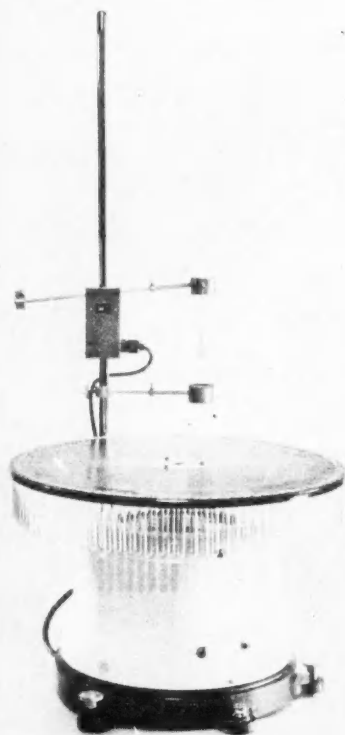
The recent formation of Griffin & George Ltd., amalgamating Griffin & Tatlock, W. & J. George & Becker Ltd. and Standley Belcher & Mason Ltd., enables us to offer from our Manchester premises all the products of the George & Becker, Birmingham, instrument works and laboratory furniture works, in addition to the products of the Griffin & Tatlock, Mitcham, instrument and furniture works and a complete range of laboratory apparatus and chemicals. This service is backed by a frequent delivery service from London and Birmingham.

I think that some correction should be inserted in an early issue of your journal.

Yours faithfully,

N. McKINNON WOOD.

Managing Director,
Griffin & George Ltd.



The fraction collector

New Laboratory Apparatus

RECENTLY introduced by A. Gallenkamp & Co. Ltd., 17-29 Sun Street, London E.C.2, are two new developments in laboratory equipment. The first is the 'Super-shaker,' whose shaking effect, it is claimed, is quite remarkable, and is achieved by a novel mechanism which imparts a three-dimensional movement to bottles not unlike that obtained by hand, but much more vigorous. The movement can be described as violent reciprocation accompanied by a twisting up and down motion. Bottles are held in a cast aluminium frame which is simple and positive, and which can hold single bottles from 100 ml. to 90 oz. Winchester.

The other is a fraction collector for column chromatography. The collector plate is available in four sizes, 100 by 3 ml., 84 by 10 ml., 54 by 25 ml., and 44 by 50 ml., with one collecting position in excess of the number quoted, intended for connection to a waste receiver. The fraction measuring device consists of an automatic syphon mounted on a beam carrying an adjustable counterweight, and operating a mercury switch. Movement of the collector plate after discharge of the syphon is delayed until the measure is half filled again, so that drainage errors are eliminated.

HOME

Oil Products Exports

Export earnings from oil products are expected to yield the United Kingdom over £80,000,000 for 1954. In addition, orders placed in this country for oil equipment of all kinds are expected to total about £75,000,000.

Telex Service Extended

Some time ago J. M. Steel & Co. Ltd., of Kern House, 36/38 Kingsway, had installed the International Telex system; the number is 2-2640. This service has now been extended to include on the inland Telex their Manchester office at 51 South King Street, Manchester 2, whose number is 66-359 and their Birmingham office at 45 New Hall Street, Birmingham 3, whose number is 33-100.

Lactic Acid Price Increase

Bowmans Chemicals Ltd. announce that because of increased costs they have had to increase the price of dark lactic acid (Tanners' Grade). New prices, net per ton, ex works, usual container terms, have been since 1 January as follows: 44 per cent by weight, £71 (5-tons lots), £73 (1-ton lots) and £76 (cask lots); 75 per cent by weight, £122, £125 and £130.

Road Research Laboratory

The Road Research Laboratory is to hold Open Days this year at both the Materials and Construction Division at Harmondsworth, Middlesex, and the Traffic and Safety Division at Langley, Bucks. The dates fixed are Thursday, 12, and Friday, 13 May. The Scottish branch of the Laboratory at Thorntonhall, near Glasgow, will be open to visitors on Thursday, 2 and Friday 3 June.

Blick Engineering Ltd.

Blick Engineering Ltd., of Bedesway, Bede Trading Estate, Jarrow, Co. Durham, has acquired the High Vacuum engineering business of 'Blickvac' and is registering the trade mark 'Blickvac' in respect of all High Vacuum plant and equipment manufactured by it. The name of the company has been changed to Blickvac Engineering Ltd., but the address and telephone number remain unchanged.

Coking Firm Closes

Because of continuing trading losses, the Pinxton Coking Co. Ltd., Pinxton, Derbyshire, is to close down, and nearly 150 employees have been given notice. The firm produced coke, tar, benzole and gas.

Cement Breaks Records

Cement production in 1954 averaged a rate of 1,000,000 tons a month for the first time, it has been announced by the Cement Makers' Federation. Total production was 750,000 tons more than in 1953.

Progress Payment

Over 1,000 employees of Joseph Watson and Sons Ltd., soap and toilet goods manufacturers of Leeds, are to receive a progress payment of £30 during 1955 as an appreciation of their efforts. All those who have been with the company for at least a year will qualify for the payment; others will receive £15.

Bid to Close Chemical Firm

Bradford Corporation Finance Estimates Sub-committee has recommended that a proposal of the Public Works Committee seeking to close the works of Leather's Chemical Co. Ltd. in Canal Road, Bradford, should not be approved. The proposal will be considered by the City Council next week. It was put forward after the public inquiry when the firm appealed against the conditions the Town Planning Committee sought to impose in connection with extensions to the works (THE CHEMICAL AGE, 1954, 71, 587).

Steelworks Model Works

A working model of a complete steelworks will be on view in the Science Museum, South Kensington, from 24 January. On a floor area of 60 ft. by 24 ft. it portrays a steelworks covering a site of over a quarter of a square mile in area, with a weekly capacity of 10,000 tons. The model, which has been lent to the museum by the British Iron and Steel Federation, will be demonstrated and explained at intervals, and a selection of the most recent films on various aspects of the iron and steel industry will be shown.

• OVERSEAS •

New Canadian Company

Dominion Tar and Chemical Co. of Canada has sold its chlorine and caustic soda manufacturing plant at Beauharnois, Que., to Standard Chemical Co., a new company in which Dominion Tar has an interest. Columbia Southern Chemical Corporation will have a majority interest in Standard Chemical.

New Ammonia Plant in Hungary

A new ammonia synthesis plant is now under test at the Borsod Chemical Works at Kazincbarcika, the big industrial area now being developed in North Hungary. The 3,000 horsepower, 6,000 volt electric motor which operates the giant compressor was given its first run on 19 December and on 22 December fitters finished assembling the compressor itself, which is stated to be unique in Hungary. Test production began soon afterwards.

Shell of Canada's Expansion Plans

An expansion programme costing \$4,000,000 is announced by Shell of Canada for their Montreal East refinery. Included in the programme is the addition of a new vacuum flasher and an increase in the capacity of the catalytic cracking unit from 16,500 to 19,500 barrels daily. The additions are due to be completed late in 1955 and are intermediate steps in a scheme designed eventually to increase the refinery's processing capacity from 44,000 to 55,000 barrels of crude oil daily.

Stockholm Conference

Provisional programme of the Stockholm conference of the International Union of Leather Chemists Societies has now been prepared. The conference is to take place at the Royal Technical Institute, Stockholm, from 1 to 4 August and will end with a banquet. Symposiums are planned on 'The Properties of Leather' and 'Fundamentals of the Chemistry of Tanning Processes,' and there is to be a lecture on 'Our Present Knowledge of Collagen' by Professor W. Grassmann. There will be visits to places of interest and, on the second day, a reception at the Town Hall by invitation of the Stockholm City Council.

Uranium Found in Italy

The Italian chemical firm of Montecatini has announced the discovery of uranium in the Cuneo Plain, south of Turin. Industrial exploitation is not, however, possible at present.

Italian Firm to Expand Sindri

The Government of India has accepted a tender by the Montecatini Company of Italy for expansion of the Sindri fertiliser plant. Ammonium sulphate production is to be increased to 1,000 tons a day. Another fertiliser plant, using hydro-electric power, is to be built at Bhakr-Nagal, and tenders will shortly be called.

US Copper Sulphate Shipments Drop

American shipments of copper sulphate in October were 45 per cent below September, and at the lowest monthly rate since before January 1951, according to the Bureau of Mines, US Department of the Interior. Production dropped 15 per cent but was 1,500 tons in excess of shipments, and stocks rose 29 per cent. At the October rate of shipments inventories were sufficient for almost eight weeks' requirements. Foreign trade data for October are not available. There were no imports in September and exports were 1,448 tons.

Synthetic Rubber for France

Synthetic rubber production is planned to start in France in 1957. Ten firms have united to build a plant in the Rouen area which will have a capacity of 20,000 tons of butyl rubber a year. The company formed by the syndicate, Société du Catouchou Butyl, is to have an initial capital of Fr. 2,500,000,000, and it is estimated that the French Government will provide about one-third towards the construction costs. The firms taking part in this venture are Dunlop, Michelin and Kleber-Colombes, representing the tyre manufacturers, Compagnie Française de Raffinage and Esso Standard, who will provide the isobutyl, and Standard-Kuhlmann, Rhône-Poulenc, Pechiney, Ugine and Bozet-Maletra, representing the chemical interests.

PERSONAL

MR. J. BISHOP, M.I.Chem.E., M.Inst.Gas E., who joined Nordac Ltd., as general manager in March 1954, has been appointed managing director of the company.

The National Industrial Fuel Efficiency Service announces the appointment of MR. C. A. J. PLUMMER, M.Sc., A.R.I.C., M.Inst.R., as area engineer for Wales in succession to MR. G. H. BARNARD, M.Inst.F., who has taken up an appointment at headquarters in London. Mr. Plummer, a 42-year-old bachelor, is a native of Cardiff and a graduate of the University of Wales. He has worked in Cardiff, Nottingham and Bristol and on the formation of NIFES became area engineer for the South-West region. NIFES also announces the appointment of MR. H. H. GRATTIDGE, M.I.H.V.E., as area engineer for Scotland in succession to MR. J. EDWARD, M.B.E., to whom he was deputy. The post of deputy engineer has been filled by MR. W. SHORT, B.Sc.

An Englishman, MR. RICHARD C. FENTON, has been elected vice-president in charge of European operations of the Pfizer Corporation, the foreign trade subsidiary of the US pharmaceutical manufacturing firm of Charles Pfizer & Co. Inc. Mr. Fenton, who first joined the firm in 1951 to help start operations in the UK, became regional director for Europe in 1952.

MR. G. E. WATSON, director and general manager of The Crookes Laboratories Ltd., will be leaving England later this month for a flying tour of all the company's overseas offices. Within five weeks he will call at Karachi, Bombay, Singapore and Sydney. His visits will be in the nature of a routine tour of inspection.

The Faraday Medal of the Institution of Electrical Engineers has been awarded to SIR JOHN COCKROFT, K.C.B., C.B.E., M.A., Ph.D., M.Sc., D.Sc., Hon. LL.D., F.R.S., M.I.E.E., Director of the Atomic Energy Research Establishment at Harwell.

The Textile Institute Medal, for distinguished services to the textile industry in general and to the Textile Institute in particular, is to be presented to MR. W. CROSSLEY,

of Wilmslow, Cheshire, and DR. P. W. CUNLIFFE, B.Sc., Ph.D., F.R.I.C., F.T.I., of Prestwich, Lancashire. Mr. Crossley, who joined the Institute in 1937, is at present managing director of the Yorkshire Dyeing and Proofing Co. Ltd., Middleton, Lancs. He serves on eight Institute committees and is a member of the Councils of both the Textile Institute and the British Cotton Industry Research Association. Dr. Cunliffe, at present research manager of the British Cotton and Wool Dyers' Association Ltd., of Salford, joined the Institute in 1938 and was elected a Fellow in 1943. He serves on various of the Institute's technical committees.

The Textile Institute Service Medal, in recognition of valuable services to the Textile Institute, is to be awarded to MR. E. J. D. POOLE, F.R.S.A., F.T.I., senior principal technical officer of the Wool Industries Research Association, MR. L. MORRIS, B.Sc. Tech., of Brightmet, Bolton, at present a textile chemist with Allied Colloids (Manufacturing) Co. Ltd., and MR. J. R. S. GOODALL, F.T.I., of 3 Broomfield Road, Heaton Moor, Stockport. The presentations will be made at the Spring Convocation of the Institute to be held in March.

Sunvic Controls Ltd. announce that they have appointed MR. G. G. HARRIS, of Lydstep, 20 Lawn Road, Rowley Park, Stafford (Tel.: Stafford 1764) as their Midlands representative for process control. Mr. Harris was at one time Midlands representative and representative to the oil industry for Audley Engineering Co. Ltd., manufacturers of Audco valves, and has recently been employed by the English Electric Company. MR. G. R. PEEKE, of 117 Stratford Road, Birmingham 11 (Tel.: Birmingham Victoria 1076) will continue to look after Sunvic interests in the Midlands for scientific and industrial instruments.

On 1 January MR. DAVID LEIGHTON DAVIES, B.Sc. (Hons.) Wales, G.I.E.E., was appointed chief electronic engineer of Winston Electronics Ltd., Hampton Hill, Middlesex. Mr. Davies is 27 years of age. He joined Winston Electronics as one of several senior engineers on 1 January, 1954.

MR. ARTHUR M. CLARK, B.A., B.Sc., who will be general manager of the new company, British Oxygen Linde Ltd. (see p. 232) and responsible for its running, was born at Stamford, Lincs, in 1903. He was educated at Stamford School and won a Postmaster-ship to Merton College, Oxford. During



1926-27 he was demonstrator under Professor F. Soddy at the Inorganic Chemistry Laboratory and from 1927-1946 he was with I.C.I. at Billingham where he was engaged at different times in the research, process and technical departments. He

joined the British Oxygen Company in

1946 as research manager (gas separation) and was appointed plant supply manager in 1953.

He has made a number of original contributions to physico-chemical research, particularly on gas-solid and liquid-vapour equilibria, published in the *Proceedings of the Royal Society*, *Transactions of the Faraday Society*, and in French and Dutch journals. He has published many technical papers on low-temperature technique oxygen manufacture and use and he is author in the 1952 and 1953 Annual Reports of the section on 'Industrial Gases.' He is a member of the International Institute of Refrigeration Commission dealing with scientific problems of low temperature physics and thermodynamics, and also of the committee of the Chemical Engineering Group of the Society of Chemical Industry.

MR. F. G. PENTECOST, who last year celebrated his 50th year of service with A. Boake, Roberts & Co. (Holding) Ltd., has retired from the office of managing director. He will continue as chairman of the company and its main subsidiary, A. Boake, Roberts & Co. Ltd. MR. BERTRAM WHITE, B.Sc. (Lond.), F.R.I.C., has been appointed managing director of both companies. He joined the ABRAC organisation in April 1953 and was appointed deputy managing director in March 1954. Prior to this, Mr. White was for seven years technical director at the Federation of British Industries. He was closely associated with the Anglo-American Council on Productivity and was

a member of two missions sent to the USA by the Council. MR. T. A. MASON, M.A., B.Sc., has joined the company as general works manager of the Stratford, Rainham and Letchworth factories. Mr. Mason has been for the past four years technical director of Clayton Aniline Co. Ltd. He was previously a member of the board of the Alkali Division of Imperial Chemicals Ltd. As reported last week (p. 196) MR. J. A. PENTECOST has been appointed to the board of the company.

The directors of Midland Bank Ltd. announce that DR. ALEXANDER FLECK, D.Sc., LL.D., F.R.I.C., chairman of Imperial Chemical Industries Ltd., has been elected a member of their board and of the board of the Midland Bank Executor and Trustee Co. Ltd.

Pure Chemicals Ltd., Kirkby, Liverpool, announce that MR. H. SAYER, B.Sc., has been appointed sales manager and is now engaged in reconstituting the sales department of the company.

BARNETT F. DODGE, professor and Head of the Department of Chemical Engineering at Yale University, has been elected President of the American Institute of Chemical Engineers.

SIR ROBERT ROBINSON, O.M., M.A., D.Sc., LL.D., F.R.I.C., F.R.S., was installed on 7 January as president of the British Association for the Advancement of Science. He was elected at the Oxford meeting last September (see THE CHEMICAL AGE, 1954, 71, 541).

Election of two new members to the board of directors of Dow Chemical Company's export firms—Dow Chemical International Ltd., Dow Chemical Inter-American Ltd., and Dow Chemical Export Company—has been announced. The new members, MR. WILLIAM R. CLULO, treasurer and assistant secretary of the three concerns, and MR. JACK C. H. STEARNS, bring the total number on the board to seven.

JOHN R. BOWMAN, Director of Research at the Mellon Institute for Industrial Research, Pittsburgh, Pa., has been named recipient of the 1954 Professional Progress Award in Chemical Engineering, sponsored by Celanese Corporation of America, and administered by the American Institute of Chemical Engineers.

Publications & Announcements

TRIALS of barge ropes—in sisal, nylon and Terylene—recently carried out on the Thames showed that Terylene ropes were by far the most efficient and economical. All the ropes tested were of equal diameter and were used for identical towing duties. It was found that a 6 in. circumference sisal rope, the standard rope used on the Thames, lasted six days. A 6 in. Terylene rope lasted 137 days. Although synthetic ropes are more expensive, their extremely long life makes them economical. After the trials it was calculated that a sisal rope costs 194d. a day, and a Terylene rope 152d. These results were confirmed in a second trial. The trials were conducted by the largest lighterage company operating on the Thames, William Cory & Son Ltd., who were trying to reduce the frequency with which barge tow ropes have to be replaced. A wider series of trials is now under way. All the ropes used in the trials were manufactured by the Gourcock Ropework Co. Ltd., of Port Glasgow.

* * *

A CATALOGUE of the National Collection of Industrial Bacteria has been published by HMSO for DSIR. The Department is responsible for the maintenance of a collection of bacteria of industrial interest at the Chemical Research Laboratory, Teddington. The collection was established in 1950 with a nucleus of about 200 bacterial cultures taken over from the National Collection of Type Cultures, Colindale. Since that time the collection has been increased by gifts from research establishments and individuals at home and abroad and now comprises more than 750 different strains. The primary function of the collection is to supply the needs of industry, research and educational establishments for cultures of industrial or scientific interest. The cultures are usually sent out as freeze-dried desiccates in sealed evacuated ampoules, but active cultures are also available. The catalogue is set out in alphabetical order by genera. The NCIB number of each strain is given and also the number under which the organism is listed in other collections. The name and laboratory of the donor are given, together with references to the literature and any special information about the strain. The catalogue costs 2s., by post 2s. 1½d.

WEATHERFOIL Heating Systems Ltd., of Slough, Bucks, announce that they have been appointed by Coventry Radiator & Presswork Co. Ltd. to act as sole sales and servicing agents in the United Kingdom for Dravo industrial space heaters. Production of Dravo heaters by Coventry Radiator & Presswork Co. Ltd., under exclusive licence from the Dravo Corporation of America, is already well advanced and the heaters are available for early delivery. The Dravo heater is a fully automatic, oil-fired heater embodying a number of novel features, and offers exceptional economy. Installation is extremely simple, only infrequent attention and little maintenance are required, and operation cost is low as combustion efficiency of 80 per cent is guaranteed. Dravo units are suitable for installation as a complete heating system in existing or new premises or to supplement any existing heating system. Six sizes are available in ratings of from 400,000 to 1,500,000 BThU. per hr. outputs. Weatherfoil Heating Systems Ltd. (a member of the Powell Duffryn Group) have specialised for years in the design of heating systems.

* * *

RECENT additions to the catalogue of BDH Laboratory Chemicals Group, Poole, include *tert*-butyl perbenzoate, available as a non-volatile pale yellow liquid of not less than 95 per cent purity, and recommended as a polymerisation catalyst; 2:2'-dihydroxy-diphenyl, an interesting organic reagent; 9-phenyl-2:3:7-trihydroxy-6-fluorone ('phenylfluorone'), a colorimetric reagent for germanium; 2:3:5-trimethyl-phenol; and rhodium chloride.

* * *

A DESCRIPTION of a large scale distillation trial of slash pine oleo-resin from British Honduras is among the reports of recent investigations at the Colonial Products Laboratory included in *Colonial Plant and Animal Products*, Vol. IV, No. 3, recently published. The publication is the quarterly journal of the Colonial Products Laboratory and is obtainable from HM Stationery Office, price 5s. It contains 12 reports on a variety of products from different colonies.

PUBLISHED by Librairie Armand Colin, 103 Boulevard St. Michel, Paris, is 'Savons & Detergents' by Jacques Bergeron (pp. 199, 250 Fr.). This is a concise survey of the ever-growing subject of detergency, and includes a valuable discussion of the theoretical aspects, illustrated with a number of phase diagrams. After a description of various methods of manufacture there follows a discussion of the principal modern detergents, and a final chapter on the properties of dilute solutions.

* * *

INTENDED for 'the small manufacturer, the craftsman, who lack advanced technical knowledge,' 'Manuel Formulaire pour la petite industrie chimico-technique,' by Dr. M. de Keghel (Gauthier-Villars, Paris, 1954, pp. 278, 1,200 Fr.) has recently been published. The author writes: 'During 40 years hard work, in the most important private laboratory in France, and perhaps in Europe, we have had to solve more than 6,000 problems. . . . We have therefore seen many things, handled many products. All this has given us a certain practical experience, not only of the laboratory, but of manufacture, in the fields with which this formulaire deals. It is not a dictionary. Some subjects do not appear in it, because we were not sufficiently familiar with them. But it will serve for the instruction of beginners and contribute to the perfection of the experienced.'

* * *

THE Third Henderson Memorial Lecture was delivered at the Royal Technical College, Glasgow, on 8 October last by Professor J. Monteath Robertson, the subject being 'A Physical Approach to Terpenoid Structures.' The lecture has now been reprinted by the Royal Institute of Chemistry as Lectures, Monographs & Reports, 1954, No. 6. The foundation of a series of lectures in memory of the late Professor G. G. Henderson, a past-president of the Institute, is due to the generous action of Dr. David Spence, F.R.I.C., one of Professor Henderson's former pupils.

* * *

DESCRIBED in a recent issue of THE CHEMICAL AGE (1954, 71, 1038) as the largest in Europe, the 60-ton arc furnace of Samuel Fox & Co. Ltd., Sheffield, is the subject of a booklet obtainable from the company. This new unit, which is expected to produce over 1,000 ingot tons per week, doubles the available electric melting capacity of Stocks-

bridge works, and opens the way to the provision of high quality steels in vast quantities convenient for meeting the growing demands of the engineering industries.

* * *

ISOTOPE Developments Ltd., Beenham Grange, Aldermaston, are now marketing the IDL scintillation counter head, Type No. 653. The unit, a moderately priced, compact and versatile scintillation counter head, is designed to meet the exacting requirements of beta/gamma-ray spectrometry. With the alternative lead collimator provided, it is also suitable as a directional counter for diagnostic and therapeutic applications in the medical field. In addition, it may be used without a light-tight cap for special purposes such as fitting into lead castles, etc. Hitherto, considerable difficulties have been encountered with commercially-built scintillation counter heads. Because they are designed, in general, specifically for one type of application, the result has been that, as newer techniques have been introduced and other scintillation phosphors have become available, it has not been easy to adapt the scintillation counter heads to these new requirements and, therefore, there has been the likelihood of the instruments becoming obsolete. The IDL scintillation counter head, Type No. 653, overcomes these difficulties.

* * *

DETAILS of an ammonia processing plant in Lawrence, Kansas, are given in the September-October issue of *Heat Engineering*, published 'in the interest of better engineering' by the Foster Wheeler Corporation of New York. The plant, owned by Co-operative Farm Chemicals Association and a federation of 16 regional co-operatives in the midwest, was opened in August. It was designed and built by the Foster Wheeler Corporation and is intended to meet the demand for nitrogen which increased in the area by 427 per cent between 1947 and 1952. There is also an article on the world's largest capacity fluid catalytic cracking unit.

* * *

TWO films of general interest have been added to the I.C.I. Film Library. They are *Treasure Trove*, which shows how Britain's mineral wealth was formed and how it is used in the present day, and *Panorama No. 7*, which consists of several items. Among these are a description of glass manufacture, and a view of the production of the *I.C.I. Magazine*.

Law & Company News

Commercial Intelligence

The following are taken from the printed reports, but we cannot be responsible for errors that may occur.

Mortgages & Charges

(Note.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described herein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every company shall, in making its Annual Summary, specify the total amount of debt due from the company in respect of all Mortgages or Charges. The following Mortgages or Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary but such total may have been reduced.)

CAVENDISH LABORATORIES LTD., London W.—1 December, £14,000, mortgage to Rock Permanent Benefit Building Society; charged on 30, 32, 34, 36 Eastcheap E.C. *£2,900. 14 July, 1954.

Increases of Capital

The following increases in capital have been announced:—BRITISH CHROME & CHEMICALS LTD., from £1,200,000 to £1,400,000; VECTOR LABORATORIES LTD., from £200 to £2,000; BRADERINGS LTD., from £100 to £3,000; THOMPSON & CAPPER WHOLESALE LTD., from £35,000 to £100,000; WELDED FABRICATIONS AND ENGINEERING CO. (STOCKTON) LTD., from £500 to £5,000; FLOORLIE AND CHEMICALS LTD., from £100 to £1,000.

Changes of Name

The following changes of name have been announced: MILTON THERAPEUTICS EXPORT LTD. to MILTON CHEMICALS EXPORT LTD., on 1 November; SOLIDOL CHEMICAL LTD., to ASHE CHEMICAL LTD., on 8 November, 1954.

New Registrations

G. E. Platt & Co. Ltd.

Private company. (542,455). Capital £100. To import, export, manufacture and deal in pharmaceutical and chemical preparations, foodstuffs, pigments, paints, etc. Directors: George E. Platt and Miriam E. Platt. Secretary: Geo. E. Platt. Reg. office: 3a Palatine Street, Liverpool, 6.

BIP Chemicals Ltd.

Private company. (542,369). Capital £50,000. Manufacturers, workers, importers and exporters of and dealers in chemicals, synthetic syrups, resins, condensation pro-

ducts, gums, lacquers, varnishes, etc. The subscribers (each with one share) are: Eugene Byrne and Vincent G. Honeyball. The first directors are not named.

G. & M. Chemicals Ltd.

Private company. (541,999). Capital £100. Manufacturers of and dealers in medical, chemical, industrial and other preparations, etc. Directors: Phyllis M. Griffiths and Dorothy Mercer. Secretary: Wm. F. Griffiths. Reg. office: Spenser Avenue, Rock Ferry, Ches.

O. J. Patrick Ltd.

Private company. (542,338). Capital £500. Manufacturers, refiners and blenders of chemicals, drugs, cosmetics, etc. Directors: Oscar J. Patrick and Effie Patrick.

Company News

Benn Brothers Ltd.

The directors of Benn Brothers Ltd. have declared the following dividends, less tax, payable on 15 February: 3 per cent on the preference shares for the half year ended 31 December, 1954 (same) and 5 per cent interim, on the ordinary shares (same).

James A. Jobling & Co. Ltd.

Thomas Tilling Ltd., who hold a 60 per cent interest in the share capital of James A. Jobling & Co. Ltd., announce that the minority interest of 40 per cent held by Pilkington Brothers Ltd. has been acquired by Corning Glass Works of Corning, New York. Joblings have manufactured Pyrex glassware under licence from Corning since 1922 and will now have the benefit of the company's research.

Morgan Crucible Co. Ltd.

The directors of Morgan Crucible Co. Ltd. have declared a 6 per cent interim dividend on account of the year ending 31 March, 1955. This compares with 3½ per cent paid for a number of years.

Scottish Agricultural Industries Ltd.

Prospects for the coming year are 'by no means unfavourable' said the chairman of Scottish Agricultural Industries Ltd. (Sir William Gavin, C.B.E.) at the annual general meeting on 6 January. In a seasonal trade, it was difficult to give firm forecasts, but a good start had been made over the past three months, he said. Sir William added that the company intended to start paying interim dividends in July.

Next Week's Events

MONDAY 17 JANUARY

Royal Institute of Chemistry

Leeds: Chemistry Lecture Theatre, The University, 6.30 p.m. 'Progress Towards Atomic Power' by Dr. R. Spence.

Society of Chemical Industry

London: Chemical Society's Rooms, Burlington House, Piccadilly, 5.30 p.m. Joint meeting of Agriculture and Pesticides Groups. 'The Crop Protection Products Approval Scheme: Part II.'

Institute of Metal Finishing

London: Northampton Polytechnic, St. John Street, E.C.1, 6.15 p.m. 'Some Aspects of Sulphuric Acid Anodising to Specification DTD 910C' by V. F. Henley, and 'Some Aspects of Recent Researches on Anodising' by A. W. Brace.

Pharmaceutical Society of Great Britain

London: 17 Bloomsbury Square W.C.1, 7.30 p.m. 'The Origins of Chemistry—Alchemy or Technology?' by Dr. D. McKie.

TUESDAY 18 JANUARY

Society of Chemical Industry

London: Chemical Society's Rooms, Burlington House, Piccadilly, 5.30 p.m. Agriculture Group. 'Leaf Leachates as a Factor in Pedogenesis' by Dr. C. Bloomfield.

Birmingham: Room No. 8, Birmingham and Midland Institute, Paradise Street, 6.30 p.m. Corrosion Group. 'The Inhibition of the Attack of Metals by Acids' by Dr. T. P. Hoar (joint meeting with Birmingham and Midlands Section).

Institution of Chemical Engineers

London: Geological Society, Burlington House, Piccadilly, 5.30 p.m. 'Performance Data for Expanded Metal Column Packing' by H. R. C. Pratt and others and 'The Mechanism of Drop Formation from Gas or Vapour Bubbles' by F. Knellmann, N. Domrowski and D. M. Newitt.

Institute of Metal Finishing

Birmingham: Regent House, Colmore Row, 6.30 p.m. Organic Finishing Group Open Forum.

British Ceramic Society

Stoke-on-Trent: Lecture Hall of the British Ceramic Research Association,

Queen's Road, Penkhull, 7 p.m. Pottery Section. 'Firing Problems in Relation to Ceramic Kiln Design' by Professor R. J. Sarjant.

Society for Analytical Chemistry

London: Iron and Steel Institute, 4 Grosvenor Gardens S.W.1, 6.30 p.m. Physical Methods Group meeting on 'Solvent Extraction.'

Institute of Petroleum

Manchester: The Engineers' Club, Albert Square, 6.30 p.m. Presidential address.

WEDNESDAY 19 JANUARY

Royal Society of Arts

London: John Adam Street, Adelphi, W.C.2, 2.30 p.m. Cadman Memorial Lecture, 'Research in the Coal Industry' by Dr. W. Idris Jones, C.B.E.

Royal Institute of Chemistry

London: King's College Chemistry Lecture Theatre, King's College, Strand W.C.2, 6.30 p.m. 'Some Recent Advances in Organic Chemistry' by Professor M. Stacey (joint meeting with London Section, SCI).

Society for Analytical Chemistry

Edinburgh: Macvitties (Charlotte Rooms), 136 Princes Street, 12.45 p.m. Annual general meeting of Scottish Section.

Institute of Fuel

Sheffield: Royal Victoria Station Hotel, 2.30 p.m. 'The Investigation of Fluid Flow Problems by Model Techniques' by F. A. Gray and A. D. Robertson.

Society of Instrument Technology Ltd.

Middlesbrough: Cleveland Scientific and Technical Institution, Corporation Road, 7.30 p.m. 'The Physical Basis of Some New Measuring Techniques' by A. J. Young.

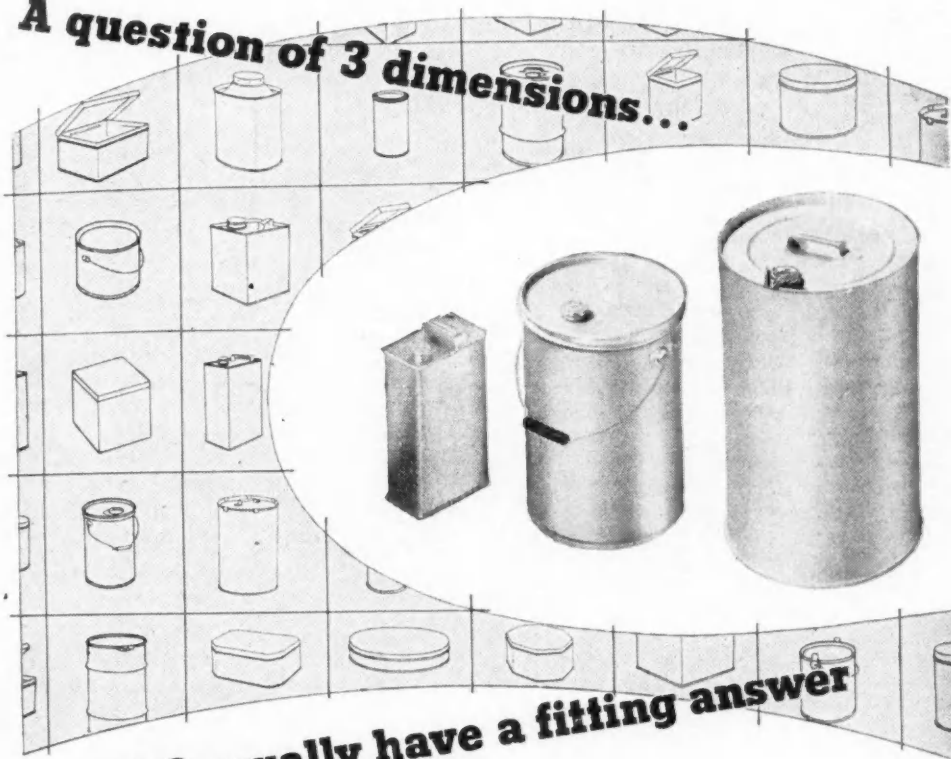
THURSDAY 20 JANUARY

Chemical Society

London: Large Chemistry Lecture Theatre, Imperial College of Science and Technology, S.W.7, 7.30 p.m. Tilden lecture. 'The Role of the π -Electron in Aromatic Chemistry' by Professor H. C. Longuet-Higgins.

[continued on page 250]

A question of 3 dimensions...



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Next Week's Events

continued from page 248

Society of Chemical Industry

London: Battersea Polytechnic, Battersea Park Road S.W.11, 6.30 p.m. Conversation and exhibition (Corrosion Group).

Institute of Fuel

London: Institution of Civil Engineers, Great George Street S.W.1, 5.30 p.m. Discussion on the Beaver Report.

FRIDAY 21 JANUARY

Chemical Society

Cambridge: Chemical Laboratory, The University, 8.30 p.m. 'Recent Advances in Acetylene Chemistry' by Professor R. A. Raphael.

Institute of Fuel

Glasgow: Royal Technical College, 7 p.m. 'The Recovery of Sulphur from Coke-Oven Gas by the Collin Process' by T. H. Williams.

Plastics Institute

Manchester: The Engineers' Club, Albert Square, 6.30 p.m. 'Some Recent Developments in the Plastics Industry' by Dr. E. M. Evans.

Courtauld's Tariff Claim

IN a review of the application by Courtaulds (Australia) for a protective duty on continuous filament rayon yarn, the Australian Tariff Board says: 'The company based its proposed selling price on a rate of profit on funds employed which in the board's opinion is much too high when all the circumstances are taken into consideration.'

Courtaulds started construction in Australia in 1949, understanding that adequate protection would be assured to cover higher costs of labour and raw materials. The company's establishment costs were heavily increased by a rise in Australian wage levels.

A bounty of 6d. per lb. was recommended by the Tariff Board in October (see *THE CHEMICAL AGE*, 1954, 71, 998), but Courtaulds have claimed that this is inadequate.

At the hearing it was stated for the company that on the basis of higher costs the UK would have an advantage in manufacturing costs of 27d. per lb. On the other hand, extra expenses estimated at 9d. per lb. would have to be borne by the UK exporter

so that the net disadvantage to Australia was 18d. per lb.

The board states that average cost of production in Australia is less than 30 per cent higher than the cost in the UK. Using three different profit levels, all under 15 per cent, on capital employed, it was found that assistance required to equalise the weighted average Australian selling price and the duty-free landed cost of imports from Britain varied from 1.75d. to 11.5d. per lb. of yarn, it stated.

BWRA Summer School

The fifth summer school of welding organised by the British Welding Research Association will be held at Ashorne Hill, near Leamington Spa, from 27 June to 2 July. The school takes for its basic theme 'Welding Developments in British Industry' and has been devised to cover various aspects in logical sequence during the course. As in previous years, lectures of general interest will be given in the morning and those of more specialised interest in the afternoon.

Market Reports

LONDON.—The market for industrial chemicals remains active in almost all sections with the supply position reasonably good. Contract delivery specifications for the routine soda products have covered good quantities, and a steady demand has been reported for hydrogen peroxide, aluminium sulphate and the solvents. Prices continue unchanged at recent levels with the undertone firm. There has been no new feature in the coal tar products market and a good movement of supplies has been reported.

MANCHESTER.—Leading industrial users of heavy chemical products in Lancashire and the West Riding are calling for satisfactory deliveries under contracts and with a few exceptions these are coming through fairly promptly. Fresh inquiries and actual new business reported on the Manchester market during the past week have been of fair extent in the home section and additional buying interest has been shown by shippers. Prices generally continue on a steady to firm basis. In the market for fertiliser materials business has been on a moderate scale, with basic slag and the compounds attracting most attention at the moment. A steady trade is being done in the leading tar products.


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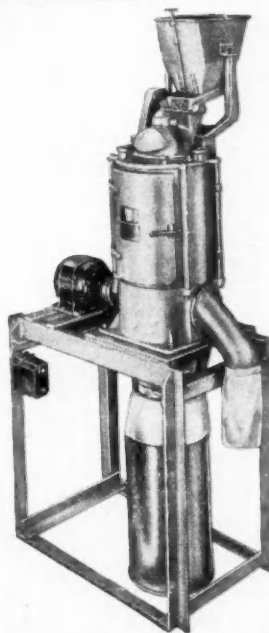
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